FlyBoost CL100

A02-OCL100

USER MANUAL

A02-OCL100_ME01

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Overview the Product

Introduction

The high-performance Wireless Network Access Point (AP) is designed for enterprise and public access applications. Embedded with the Atheros chipset, it boasts network robustness, stability and wider network coverage. Based on 802.11, the access point supports high-speed data transmission of up to 54Mbps in the 2.4GHz frequency band.

The access point is capable of operating in different modes, which makes it suitable for a wide variety of wireless applications, including long-distance deployments.

Designed with an external SMA connector offering excellent electrical performance and compatible with SMA antennas, the access point can be used for a wide variety of wireless applications and allows you to position the wireless antenna in a better signal-broadcasting location for improved wireless coverage and signal strength or simply in a more convenient location.

Moreover, its integrated Power over Ethernet (PoE) allows the access point to be used in areas where power outlets are not readily available.

To protect your security and privacy, the access point is armed with many enhanced wireless security features such as WPA, WPA2 (with Advanced Encryption Standard encryption) MAC Address Filtering, IEEE 802.1x Authentication and 64/128-bit WEP (Wired Equivalent Privacy) to ensure privacy for the heterogeneous mix of users within the same wireless network.

The access point also incorporates a unique set of advanced features such as: Virtual AP to deliver multiple services; Long-Range parameter fine-tuning which provide the access point with the ability to auto-calculate parameters such as slot time, ACK time-out and CTS time-out to achieve a longer range; and Spanning Tree Protocol (STP) which provides extra redundancy and the ability to auto-reconfigure when there are changes in the network topology.

Features and Benefits

Highly Secured Wireless Network
The access point supports the highest available wireless security standard: WPA2. WPA2 has two different modes: WPA2-Personal for SOHO users and WPA2-Enterprise for Enterprise users. The access point also supports IEEE 802.1x for secure and centralized user-based authentication. Wireless clients are thus required to authenticate through highly secure methods like EAP-TLS, EAP-TTLS, and EAP-PEAP, in order to obtain access to the network.

STP
Spanning-Tree Protocol provides path redundancy while preventing undesirable loops in the network. It forces certain redundant data paths into a standby (blocked) state. If one network segment in the Spanning-Tree Protocol becomes unreachable, or if Spanning-Tree Protocol costs change, the spanning-tree algorithm reconfigures the spanning-tree topology and re-establishes the link by activating the standby path.

HTTPS
The access point supports HTTPS (SSL) in addition to the standard HTTP. HTTPS (SSL) features additional authentication and encryption for secure communication.

Telnet
Telnet allows a computer to remotely connect to the access point CLI (Command Line Interface) for control and monitoring.

SSH
SSH (Secure Shell Host) establishes a secure host connection to the access point CLI for control and monitoring.

WDS2
WDS2 (Wireless Distributed System 2) links up access points to create a wider network in which mobile users can roam while still staying connected to available network resources.

When to Use Which Mode

Access Point Client Mode

In Access Point Client Mode the device acts as a wireless client. When connected to an access point, it creates a network link between the Ethernet network connected at this client device, and the wireless Ethernet network connected at the access point.

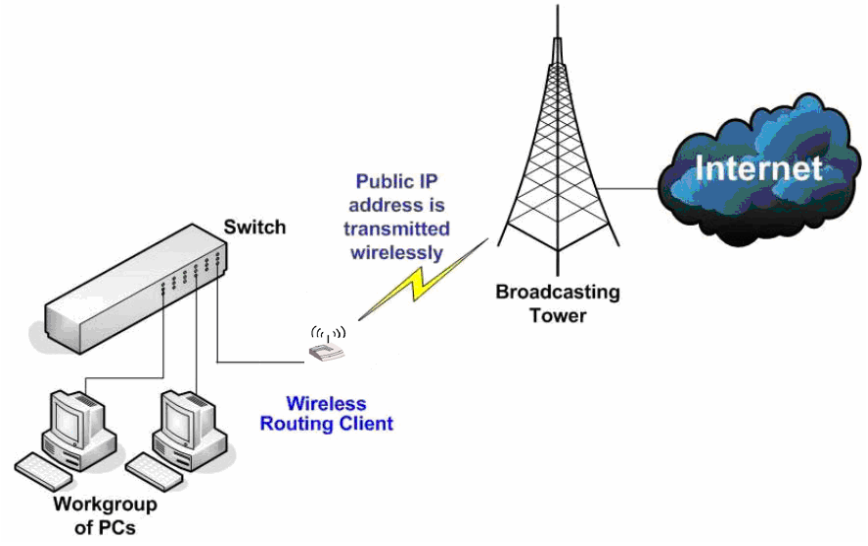
In this mode it can only connect with another access point. Other wireless clients cannot connect to it directly unless they are also connected to the same access point – allowing them to communicate with all devices connected to the Ethernet port of the access point.

In this example the workgroup PCs can access the printer connected to the access point in Access Point Client Mode.

Optional additional feature:
Point-to-Point connection in this operation mode is also supported if you specifically wish to connect with an access point only.
Please refer to the Point-to-Point setup section.

Wireless Routing Client Mode

In Wireless Routing Client Mode the Ethernet port of the access point may be used to connect with other devices on the network while Internet access would be provided through wireless communication with a wireless ISP.



Broadband Internet Access Type:

Static IP Address

Use Static IP Address if you have subscribed to a fixed IP address or to a range of fixed IP addresses from your ISP.

Dynamic IP Address

With Dynamic IP Address the access point requests for, and is automatically assigned an IP address by your ISP, for instance:

- Singapore Cable Vision
- @HOME Cable Services

PPP over Ethernet (PPPoE)

Use PPPoE if you are using ADSL services in a country utilizing standard PPPoE authentication, for instance:

- Germany with T-1 Connection
- Singapore with SingNet Broadband or Pacific Internet Broadband

PPTP

Use PPTP if you are using ADSL services in a country utilizing PPTP connection and authentication.

Layer Two Tunneling Protocol (L2TP)

L2TP enables ISPs to operate Virtual Private Networks (VPNs)

Perform Basic Configuration

Setup Management Port

At the Management Port Setup page, you may:

- Set Ethernet Link Speed and duplex settings.
- Automatically obtain IP address from DHCP server.
  The default IP 192.168.168.1 is used until a new IP is obtained.
  Access Point Clients also allows PCs connected to the Ethernet port to obtain IP from the DHCP server at the access point end network.
- Manually define IP address

Follow these steps to set Ethernet Link Speed and duplex settings.

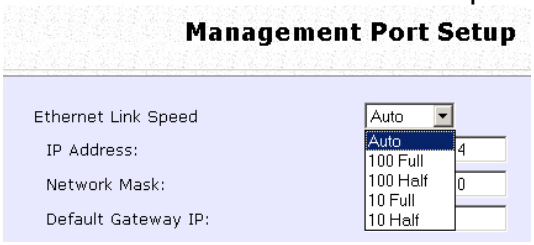
Step 1:

Click on **TCP/IP Settings** from **Management Setup** from the **CONFIGURATION** menu.

Step 2:

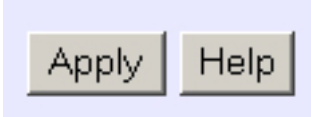
Select the desired **Ethernet Link Speed** and duplex settings.

- Auto: Automatic Detection
- 100 Full: 100BaseT Full-Duplex
- 100 Half: 100BaseT Half-Duplex
- 10 Full: 10BaseT Full-Duplex
- 10 Half: 10BaseT Half-Duplex



Step 2:

Click the **Apply** button.



Follow these steps to automatically obtain the IP address from DHCP server.

Step 1:

Click on **TCP/IP Settings** from **Management Setup** from the **CONFIGURATION** menu.

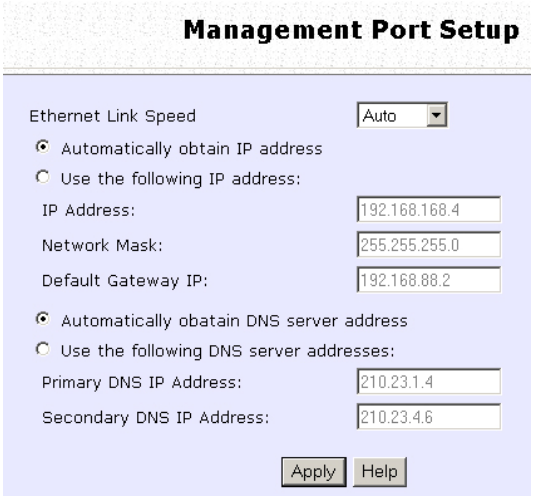
Step 2:

Select to **Automatically obtain IP address**.

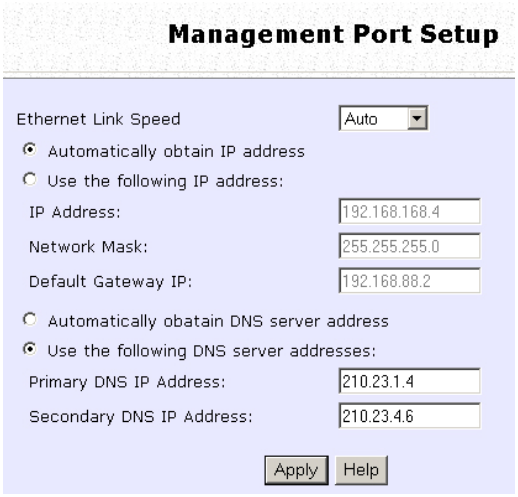
Step 3:

Select to either **Automatically obtain DNS server address** or **Use the following DNS server addresses** and enter the parameters, if any.

In the **Management Port Setup** page, refer to the table below to replace the default settings of Access point with appropriate values to suit the needs of your network.



If you choose to **Automatically obtain DNS server address**.



If you choose to **Use the following DNS server addresses**.

Step 3:

Click on the **Apply** button to save your new parameters.

This table describes the parameters that can be modified in the **Management Port Setup** page if you select to **Use the following DNS server addresses**.

Parameters	Description
Primary DNS IP Address	Your ISP usually provides the IP address of the DNS server.
Secondary DNS IP Address	This optional field is reserved for the IP address of a secondary DNS server.

Follow these steps to manually define the IP address.

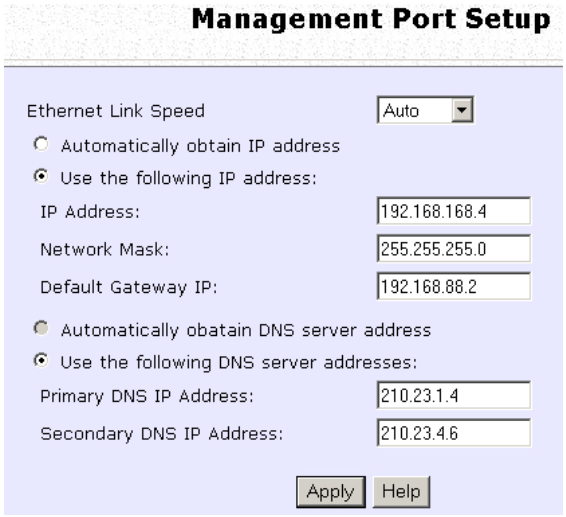
Step 1:

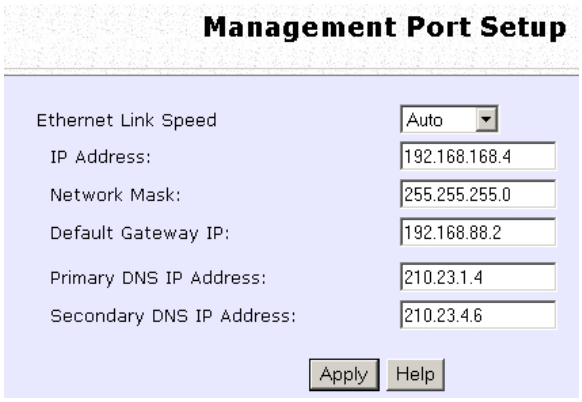
Click on **TCP/IP Settings** from **Management Setup** from the **CONFIGURATION** menu.

Step 2:

Select to **Use the following IP address**.

In the **Management Port Setup** page, refer to the table below to replace the default settings of Access point with appropriate values to suit the needs of your network.





The parameters are the same in routing mode.

Step 3:

Click on the **Apply** button to save your new parameters.

This table describes the parameters that can be modified in the **Management Port Setup** page.

Parameters	Description
IP Address	When the DHCP server of the access point is enabled (unless you set a different DHCP Gateway IP Address), this LAN IP Address would be allocated as the Default Gateway of the DHCP client. The IP address of your Access point is set by default to *192.168.168.1*.
Network Mask	The Network Mask serves to identify the subnet in which your Access point resides. The default network mask is *255.255.255.0*.
Default Gateway IP	(Optional) As a bridge Access Point, the access point does not usually communicate with devices on other IP subnets. However, the Default Gateway a PC allows the access point to communicate with devices on different subnets. For instance, if you want to access the access point from the Internet or from a router on the LAN, enter the router IP address in the Default Gateway IP field. The Default Gateway IP address of your access point is set to nil by default.
Primary DNS IP Address	Your ISP usually provides the IP address of the DNS server.
Secondary DNS IP Address	This optional field is reserved for the IP address of a secondary DNS server.

To Setup DHCP Server

There are 3 DHCP Modes:

- NONE
  By default, DHCP Mode is set to NONE. Leave the selection at this mode if you do not wish to use DHCP.

- DHCP Server
  Select this mode to setup a DHCP server.

- DHCP Relay
  Select this mode to setup a DHCP relay.
  By default, DHCP broadcast messages do not cross router interfaces.
  DHCP Relay supports DHCP Clients and DHCP Servers on different networks by configuring the router to pass selective DHCP messages.

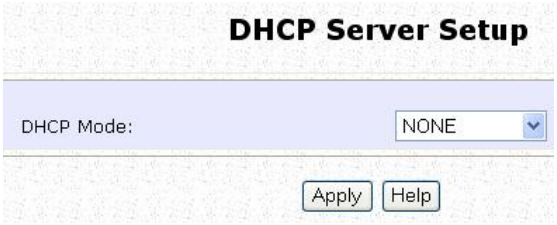
Follow these steps if you do not wish to use DHCP.

Step 1:

Click on **Advanced Settings** from **Management Setup** from the **CONFIGURATION** menu.

Step 2:

Set **DHCP Mode** to **NONE**.



Step 3:

Click on the **Apply** button.

The following will guide you to setup the DHCP Server.

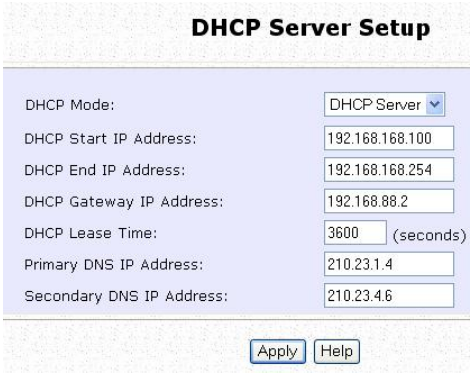
Step 1:

Click on **Advanced Settings** from **Management Setup** from the **CONFIGURATION** menu.

Step 2:

Set **DHCP Mode** to **DHCP Server**.

In **DHCP Server Setup**, refer to the table below to set the appropriate values to suit the needs of your network.



Step 3:

Click on the **Apply** button.

This table describes the parameters that can be modified in **DHCP Server Setup**.

Parameters	Description
The fields DHCP Start IP Address and DHCP End IP Address fields allow you to define the range of IP addresses from which the DHCP Server can assign an IP address to the LAN.	
DHCP Start IP Address	This is the first IP address that the DHCP server will assign and should belong to the same subnet as the access point. For example if the access point IP address is 192.168.168.1 and the network mask is 192.168.168.1 and 255.255.255.0, the DHCP Start IP Address should be 192.168.168.X, where X can be any number from 2 to 254. It is pre-set to *192.168.168.100*.
DHCP End IP Address	This is the last IP address that the DHCP server can assign and should also belong to the same subnet as your access point. For example if the access point IP address is 192.168.168.1 and the network mask is 192.168.168.1 and 255.255.255.0, the DHCP End IP Address should be 192.168.168.X, where X can be any number from 2 to 254. It is pre-set as *192.168.168.254*.

DHCP Gateway IP Address	Though the DHCP server usually also acts as the Default Gateway of the DHCP client, the access point allows you to define a different Gateway IP Address which will be allocated as the Default Gateway IP of the DHCP client. The DHCP client will thus receive its dynamic IP address from the access point but will access to the Internet or the other LAN through the Default Gateway defined by the DHCP Gateway IP Address. For instance if the access point in Access Point Client mode connects to an Internet gateway X, a PC wired to the access point will be unable to obtain a dynamic IP address directly from X. But if you enable the DHCP server of the access point and set the IP address of X as the DHCP Gateway IP Address, the PC will obtain its IP address from the access point and access the Internet through X.
DHCP Lease Time	This is the length of time that the client may use the assigned address before having to check with the DHCP server to see if the Address is still valid.
Primary DNS IP Address	Your ISP usually provides the IP address of the DNS server.
Secondary DNS IP Address	This optional setting is the IP address of a secondary DNS server.

The following will guide you to setup the DHCP Relay.

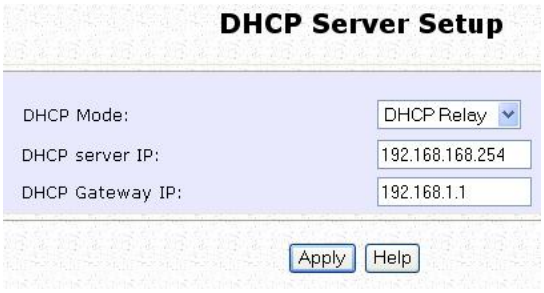
Step 1:

Click on **Advanced Settings** from **Management Setup** from the **CONFIGURATION** menu.

Step 2:

Set **DHCP Mode** to **DHCP Relay**.

In **DHCP Server Setup**, refer to the table below to set the appropriate values to suit the needs of your network.



Step 3:

Click on the **Apply** button.

This table describes the parameters that can be modified in **DHCP Server Setup**.

Parameters	Description
DHCP Server IP	This is the IP address of the DHCP server.
DHCP Gateway IP	Though the DHCP server usually also acts as the Default Gateway of the DHCP client, the access point allows you to define a different Gateway IP Address which will be allocated as the Default Gateway IP of the DHCP client. The DHCP client will thus receive its dynamic IP address from the access point but will access to the Internet or the other LAN through the Default Gateway defined by the DHCP Gateway IP Address. For instance if the access point in Access Point Client mode connects to an Internet gateway X, a PC wired to the access point will be unable to obtain a dynamic IP address directly from X. But if you enable the DHCP server of the access point and set the IP address of X as the DHCP Gateway IP Address, the PC will obtain its IP address from the access point and access the Internet through X.

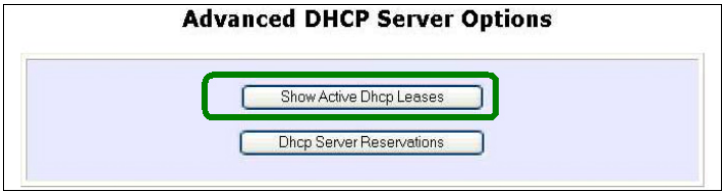
View Active DHCP Leases

Step 1:

Select **Management Setup** from the **CONFIGURATION** menu.

Step 2:

Go to the **Advanced DHCP Server Options** section and click on the **Show Active DHCP leases** button.



The **DHCP Active Leases** table displays:

- The **Host Name** of the DHCP client.
- The **IP Address** allocated to the DHCP client.
- The **Hardware (MAC) Address** of the DHCP client.
- The **Lease Expired Time.**

NOTE

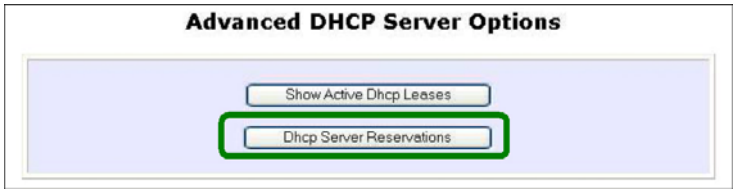
Invalid date and time displayed in the **Lease Expired Time** column indicates that the clock of the access point has not been set properly.

Reserve IP Addresses for Predetermined DHCP Clients

A reserved IP address is excluded from the pool of free IP addresses the DHCP server draws on for dynamic IP address allocation.
For instance if you set up a publicly accessible FTP or HTTP server within your private LAN, while that server requires a fixed IP address you would still want the DHCP server to dynamically allocate IP addresses to the rest of the PCs on the LAN.

Step 1:

From the **Advanced DHCP Server** Options section click on the **DHCP Server Reservations** button.



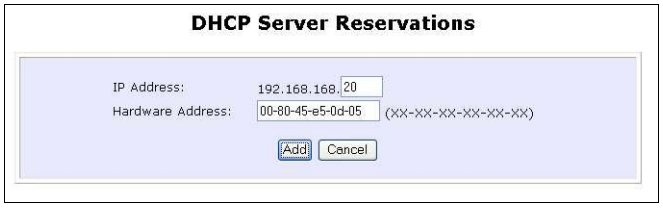
Step 2:

Click on the **Add** button.

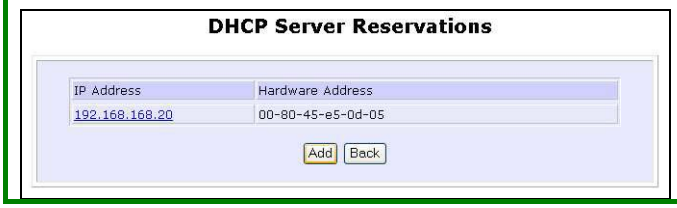
Step 3:

Fill in:
The host portion of the **IP Address** to be reserved.
The **Hardware Address**, in pairs of two hexadecimal values.

Press the **Apply** button to effect your new entry.



The **DHCP Server Reservations** page refreshes to display the currently reserved IP addresses.



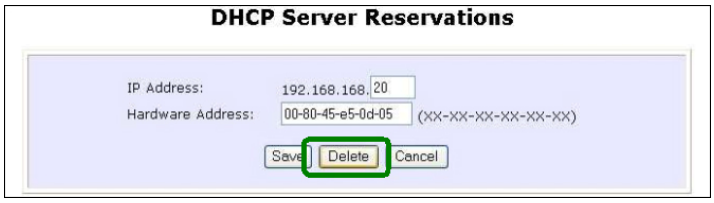
Delete DHCP Server Reservation

Step 1:

Select the reserved IP address to delete.

Step 2:

Click on the **Delete** button.



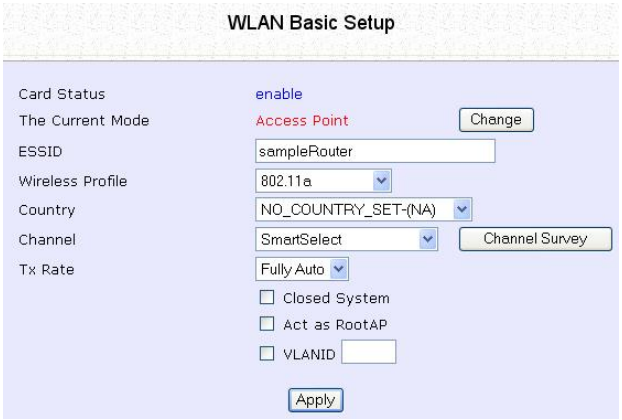
The **DHCP Server Reservations** table refreshes to display your changes.

Setup WLAN

Configure the Basic Setup of the Wireless Mode

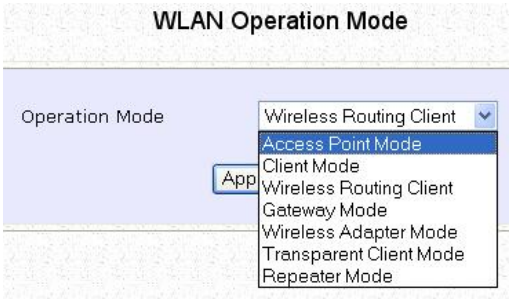
Step 1:

Select **WLAN Setup** from the **CONFIGURATION** menu and you will see the sub menus expanded under **WLAN Setup**, select **Basic**.
The default operating mode of the access point is the **Access Point** mode.



Step 2: (Optional: Change Current mode)

To change the current mode of the access point click on **Change**, select the **Operation Mode**, and click on the **Apply** button to access the setup page of the selected mode. You will be prompted to reboot the access point to effect the mode setting.

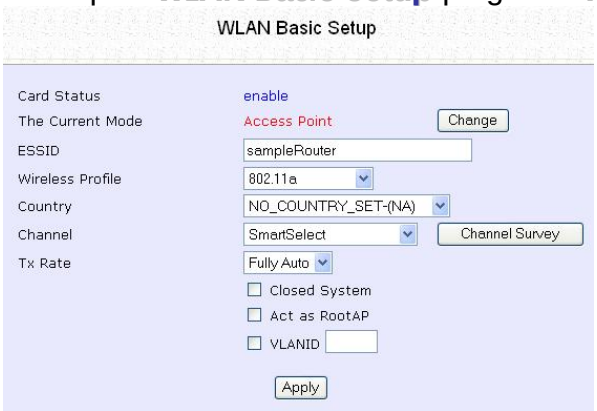


Step 3:
Enter the parameters in their respective fields, click on the **Apply** button and reboot your device to let your changes take effect.

Note that the **WLAN Basic Setup** pages for the modes are different.

Example: **WLAN Basic Setup** page for **Client Mode**

Example: **WLAN Basic Setup** page for **Access Point**



WLAN Basic Setup page Parameters	Description
The Current Mode	The default operating mode is the **Access Point** mode. Operating modes: • Access Point Mode • Client Mode • Wireless Routing Client • Gateway Mode • Wireless Adapter Mode • Transparent Client Mode • Repeater Mode You can toggle the modes by clicking on the **Change** button.
ESSID	Enter a preferred name for the wireless network. Your wireless clients must be configured with the same ESSID. This case-sensitive entry can consist of a maximum of 32 characters.
Site Survey	A list of wireless devices in the WLAN that are detected by your access point. Information such as MAC address, channel, SSID, algorithm and signal strength can be found in the listing. This feature is supported by the Access Point Client and Wireless Routing Client modes.

Wireless Profile	A selection of network environment types in which to operate the access point: • **802.11a only (Version AG)** Supports wireless A clients with data rates of up to 54Mbps in the frequency range of 5.4GHz. • **802.11b only** Supports wireless B clients with data rates of up to 11Mbps in the frequency range of 2.4GHz. • **802.11b/g mixed** Supports both wireless B and G clients. • **802.11g only** Supports wireless-G clients that offer transmission rates of up to 54Mbps in the 2.4GHz frequency band.
Country	Choose the **Country** where you are located.
Channel	This option allows you to select a frequency channel for the wireless communication and is only available in the Access Point, Point to Point and Point to Multiple Point modes. Select SmartSelect to automatically scan and recommend the best channel that the access point can utilize.
Tx Rate	Allows you to choose the rate of data transmission ranging from **1Mbps** to **Fully Auto**.
Closed System	The access point will not broadcast its **WLAN name (ESSID)** when **Closed system** is enabled. By default **Closed system** is disabled.

Act as RootAP	The access point will connect with 1, or multiple clients to create a point-to-point and point-to-multi-point connection network with 2 or more access points. This connection mode is fully compliant with 802.1h standards.
VLAN ID	This is the number that identifies the different virtual network segments to which the network devices are grouped. This can be any number from 1 to 4094.
Channel Survey	A list of channels that are detected by your access point in the WLAN. Information such as frequency, channel, MyQuality, NeighQuality, APCount and Recommendation can be found in the listing. The Access Point and Gateway modes support this feature.

Scan for Site Survey

(Available in Client and Wireless Routing Client modes)

Step 1:

In the **Mode Setup** page click on the **Site Survey** button.

The **Site Survey** provides a list of the **MAC addresses (BSSID)** and **SSID** of neighbouring access points detected, the **Chan** (channels), **Auth** (Authentication), **Alg** (Algorithm) used, and the strength of the **Signal** received.

Step 2:

To connect the client to one of the access points detected, select the radio button corresponding to the access point you want to connect to.

Step 3:

Click on the **Apply** button to effect the change and return to the setup page.

Step 4:

Click on the **Refresh** button to update the screen.

Read-Only Parameters of Neighbouring Access Points Viewable from Site Survey page	Description
Bssid	Wireless MAC address of the access point in an wireless network infrastructure.
SSID	Network name that uniquely identifies the network to which the access point is connected.
Chan	Channel being used for transmission.
Auth	Types of authentication, such as WPA, WPA-Personal, etc being used by the access point.
Alg	Types of algorithm, such as WEP, TKIP, etc being used by the access point.
Signal	Strength of the signal received in percentage.

NOTE

Site Survey is used to scan and display all access points based on the current security setting of your access point.

Explanation of the following information supplied by the Site Survey according to the security setting:

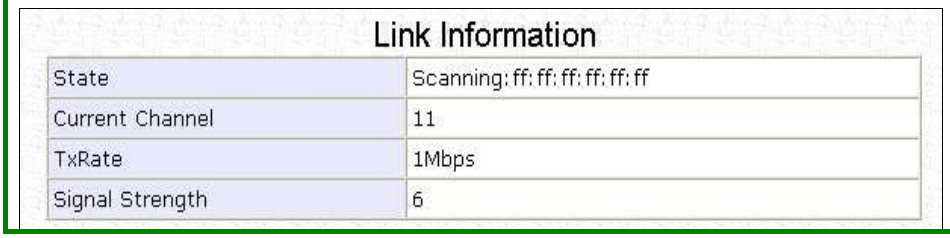
- If the security mode is set to **None** or **WEP**, the scan will show all available access points with no security or WEP security
- If the security mode is set to **WPA-Personal**, the scan will show all available access points with all types of security from **no** security, **WEP** security to **WPA-Personal** security.

View Link Information

(Available in Client and Wireless Routing Client modes)

To view the connection status when the client is linked to another access point, click on the **Show Link Information** button.

The **Link Information** table displays the following data:



Link Information

State	Scanning: ff: ff: ff: ff: ff: ff
Current Channel	11
TxRate	1Mbps
Signal Strength	6

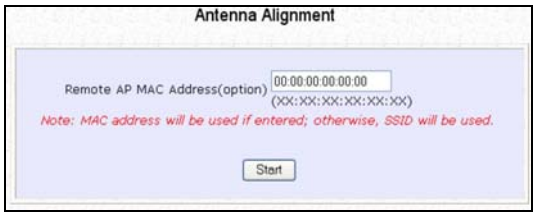
Parameters Viewable from Link Information page	Description
State	Displays whether the **State** is **Scanning** or **Associated**, and MAC address of the access point to which the client is connected.
Current Channel	Channel presently being used for transmission.
Tx Rate	Rate of data transmission in Mbps.
Signal Strength	Intensity of the signal received, in percentage.

Align the Antenna

Antenna Alignment precisely aligns the antenna over long distances for higher signal strength to improve the connection between the access point and another access point.

Step 1:

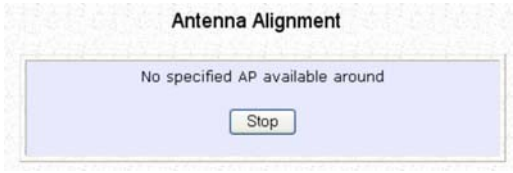
Select **WLAN Setup** from the **CONFIGURATION** menu. You will see the sub-menus expanded under **WLAN Setup**. Click on **Antenna Alignment**. The **Antenna Alignment** page can act as a diagnostic tool to check the communication with a remote device. The remote AP MAC Address is preset to all zeros by default.



Step 2:

If you wish to specify the MAC address of the remote AP, edit the field next to **Remote AP Address (option)**, followed by clicking on the **Start** button. A pop-up status screen will display, allowing you to monitor the signal strength received from the remote access points.

If there is no specified access point with the specified MAC address, this screen will display. To abort or to key in the MAC address of another available remote access point, click on the **Stop** button.



NOTE
If no MAC address is entered, the **Antenna Alignment** tool will make use of the SSID to align the antenna. Please ensure that the correct SSID is entered. If more than one access point share the same SSID, the access point with the strongest signal will be shown.

Signal Strength (RSSI Value) Indicated by DIAG LED	Status of DIAG LED
Above 20	Stays turned on.
Between 19 and 17	Flashes 6 times.
Between 17 and 14	Flashes 3 times.
Between 13 and 10	Flashes once.
Below 10	Turns off.

NOTE
Outdoor long distance connection should preferably have a signal strength of a RSSI of 10 and above.

NOTE
To ensure proper functionality of the device, select to Stop antenna alignment.
Alternatively, you may also reboot the device.

Configure the Advanced Setup of the Wireless Mode

Step 1:

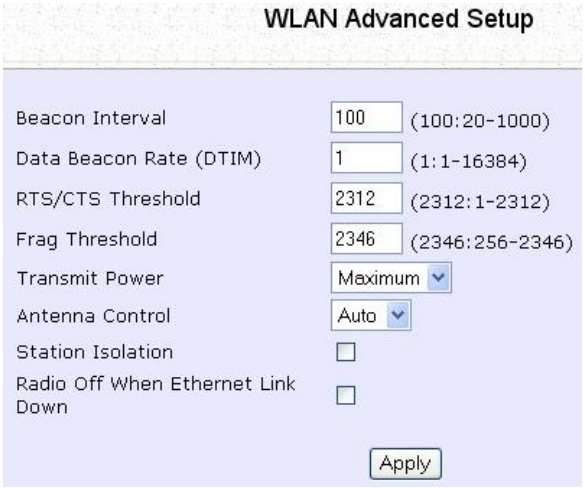
Select **WLAN Setup** from the **CONFIGURATION** menu to expand four sub-menus. From here, select **Advanced**.

Step 2:

Enter the parameters in the **WLAN Advanced Setup** page.

Step 3:

Click on the **Apply** button to update the changes.



Advanced Setup Parameters	Description
Beacon Interval (Only in Access Point mode)	Amount of time between beacon transmissions. This tells the client when to receive the beacon. A beacon is a guidance signal sent by the access point to announce its presence to other devices in the network.
Data Beacon Rate (DTIM) (Only in Access Point mode)	How often the beacon contains a delivery traffic indication message (DTIM). The DTIM identifies which clients have data waiting to be delivered to them. If the beacon period is set at the default value of 100, and the data beacon rate is set at the default value of 1, the access point will send a beacon containing a DTIM every 100 kilomicrosecond (1 kilomicrosecond equals 1,024 microsecond)
RTS/CTS Threshold	Minimum size of a packet in bytes that will trigger the RTS/CTS mechanism. This value extends from 1 to 2312 bytes.
Frag Threshold	Maximum size that a packet can reach without being fragmented, represented in bytes. This value extends from 256 to 2346 bytes, where a value of 0 indicates that all packets should be transmitted using RTS.
Transmit Power	Drop-down list of a range of transmission power.
Radio Off When Ethernet Link Down	Disables the radio card automatically when the Ethernet link is down.

NOTE
The values illustrated in the example are suggested values for their respective parameters.

View the Statistics

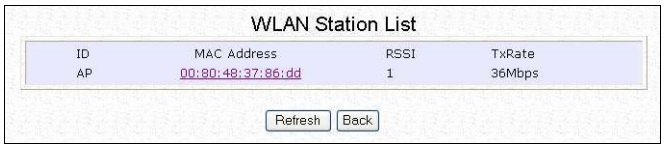
The Statistics feature reveals information on the wireless device connected to the WLAN.

Step 1:

Select **WLAN Setup** from the **CONFIGURATION** menu. The sub-menus under **WLAN Setup** expand, select **Statistics**.
Wireless clients that are connected to the WLAN are shown in the WLAN Station List.

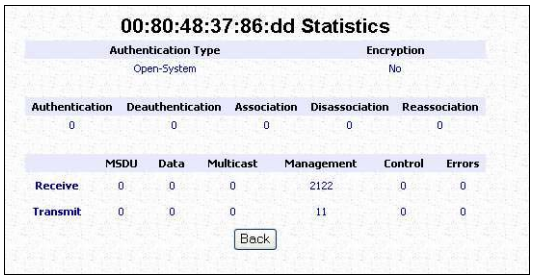
Step 2:

Click on the **Refresh** button to get the latest information on the availability of wireless clients in the wireless network.



Step 3:

To check the details on an individual wireless client, click on the corresponding MAC Address in the WLAN Station List.
The statistics of the selected wireless client displays.



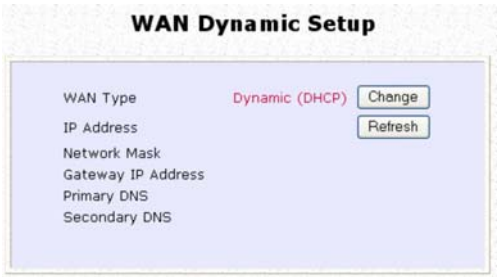
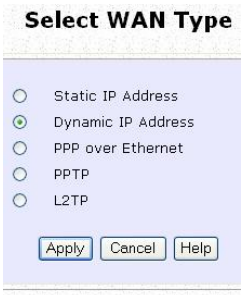
In **Client** mode you are not allowed to view the information of other wireless clients, to do that you need to change to the Access Point mode.

Setup your WAN

(Available in Wireless Routing Client and Gateway modes)

NOTE:
Any changes to the WAN Setup will only take effect after rebooting.

Setup your WAN to share Internet connection among the clients of the access point.

Setup your WAN for cable internet whereby WAN IP address is dynamically assigned by ISP
The access point is pre-configured to support this WAN type. However, you may verify the WAN settings with the following steps:
Step 1: Under **CONFIGURATION** on the command menu, select **WAN Setup**.
Step 2: On the **WAN Dynamic Setup** screen, verify that the **WAN Type** is **Dynamic (DHCP)**. Otherwise, click on the **Change** button. 
Step 3: Select **Dynamic IP Address** and hit the **Apply** button. Reboot to let the settings take effect. 

Note:
Additional configuration might be required before your ISP will allocate an IP address to the access point.
Certain ISPs require authentication through a DHCP Client ID before releasing a public IP address to you. The access point uses the System Name in the System Identity as the DHCP Client ID.
Therefore if this is the case, refer to your ISP for the correct DHCP Client ID to be set and follow **steps 4 - 5** to accomplish the setup.

Step 4:

Steps 4 - 5 are for those who need to set up the **System Name** in **System Identity** so that your ISP can authenticate it as a valid DHCP Client ID.
Select **System Identity** under the **SYSTEM TOOLS** command menu.

Step 5:
Enter the DHCP Client ID assigned by your ISP for the **System Name**. You may also enter in a preferred **System Contact** person and the **System Location** of the access point. Click the **Apply** button.
Select **Reboot System** under **SYSTEM TOOLS** and click the **Reboot** button to effect the settings.

Setup your WAN for cable internet whereby fixed WAN IP address is assigned by ISP

WAN Setup Parameters Example:

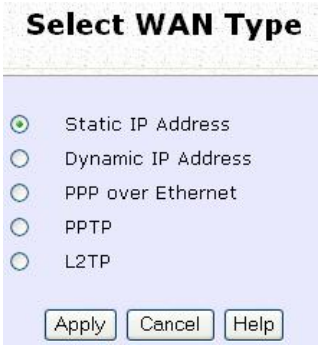
- IP Address: 203.120.12.240
- Network Mask: 255.255.255.0
- Gateway IP Address: 203.120.12.2

Step 1:

Under **CONFIGURATION** on the command menu, select **WAN Setup**.

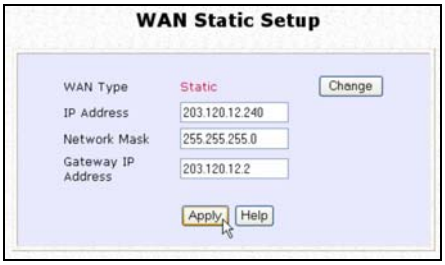
Step 2:

Access the **Select WAN Type** page and select **Static IP Address** before clicking the **Apply** button.



Step 3:

Fill in the information provided by your ISP in the **IP Address**, **Network Mask** and **Gateway IP Address** fields, and click the **Apply** button. Select **Reboot System** under **SYSTEM TOOLS** and click the **Reboot** button to effect the settings.



Setup your WAN for ADSL Internet using PPP over Ethernet

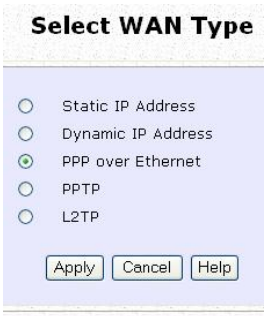
If you subscribe to an ADSL service using PPP over Ethernet (PPPoE) authentication, you can set up your access point's WAN type as follows. For example, you may configure an account whose username is 'guest' as described below:

Step 1:

Under **CONFIGURATION** on the command menu, click on **WAN Setup**.

Step 2:

Access the **Select WAN Type** page and choose **PPP over Ethernet** before clicking the **Apply** button.

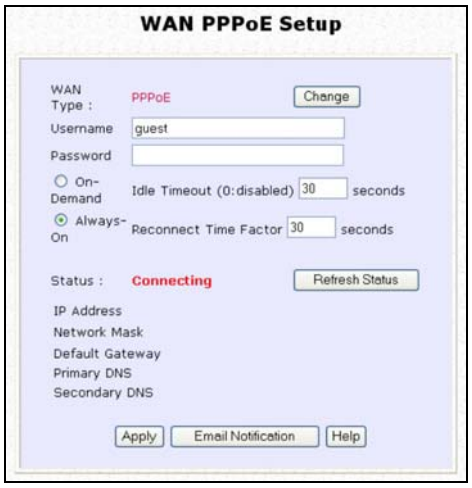


Step 3:

Enter your account name assigned by your ISP (Example: guest) in the field for **Username**, followed by your account **Password**.

Select **Always-On** if you want your access point to always maintain a connection with the ISP. Otherwise select **On-Demand** for the access point to connect to the ISP automatically when it receives Internet requests from the PCs in your network.

Idle Timeout is associated with the **On-Demand** option, allowing you to specify the value in seconds after the last Internet activity by which the access point will disconnect from the ISP. A value of "0" will disable idle timeout. **Reconnect Time Factor** is also associated with the **Always-on** option and specifies the maximum time the access point will wait before reattempting to connect with your ISP. A value of "0" will disable idle timeout. Click the **Apply** button and **Reboot** the access point.



You can limit the maximum size a packet can be in a network by setting the **MTU** (Maximum Transmissible Unit).
Click the **MTU** Button in **Advanced WAN Options**.

The **MTU Value** has a range of 1 to 1492.
Enter the **MTU Value** and click **Apply**.

Setup your WAN for ADSL Internet using Point-to-Point Tunneling Protocol (PPTP)

WAN Setup Parameters Example:

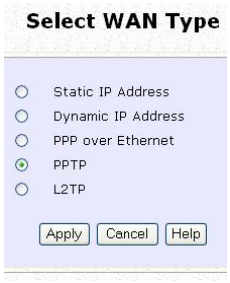
- IP Address: 203.120.12.47
- Network Mask: 255.255.255.0
- VPN Server: 203.120.12.15

Step 1:

Under **CONFIGURATION** on the command menu, click on **WAN Setup**.

Step 2:

Access the **Select WAN Type** page and select **PPTP** before clicking the **Apply** button.

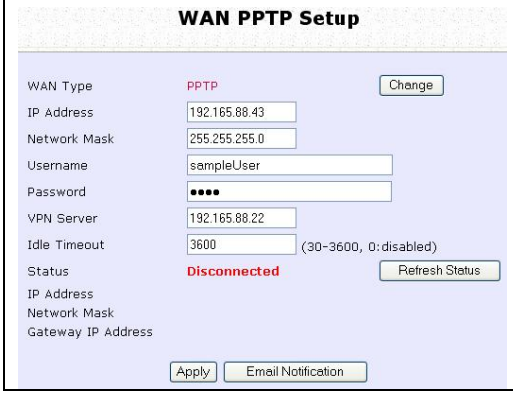


Step 3:

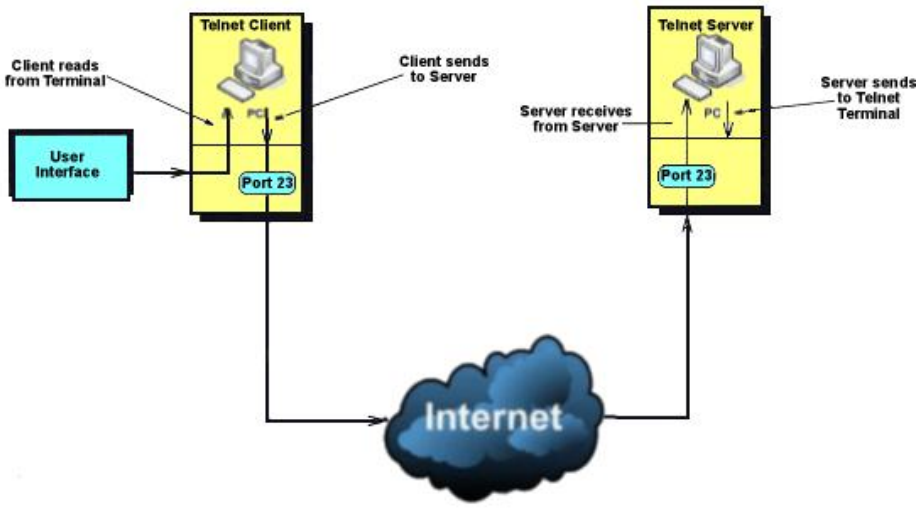
Fill in the information provided by your ISP in the **IP Address**, **Network Mask**, **VPN Server**, and **DHCP** fields, and click the **Apply** button.

Select **Reboot System** under **SYSTEM TOOLS** and click the **Reboot** button to effect the settings

The **Idle Timeout** setting allows you to specify the value in seconds after the last Internet activity by which the access point will disconnect from the ISP. A value of "0" will disable idle timeout.



Setup Telnet / SSH



Telnet allows a computer to remotely connect to the access point CLI (Command Line Interface) for control and monitoring.

SSH (Secure Shell Host) establishes a secure host connection to the access point CLI for control and monitoring.

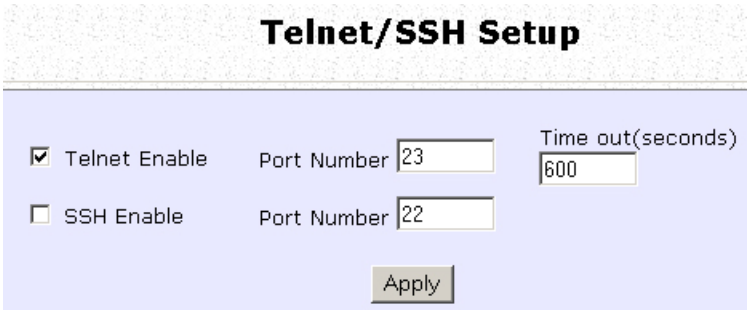
Step 1:

Select **Telnet/SSH Setup** from the **CONFIGURATION** menu.

Step 2:

1. Select Telnet Server Enable and enter the Port Number to enable.
2. Select SSH Server Enable and enter the Port Number to enable.
3. Enter the **Time out** in seconds for Telnet.

Click the **Apply** button.



Step 3:

To add user:

1. Click the **Add** button.

2. In Add User Entry Page, enter the User Name, Password, and specify whether the user is granted permission to Read Only or Read/Write.

3. Click the **Apply** button.

To Delete User:

1. Select which user to Delete.

2. Click the **Delete** button.

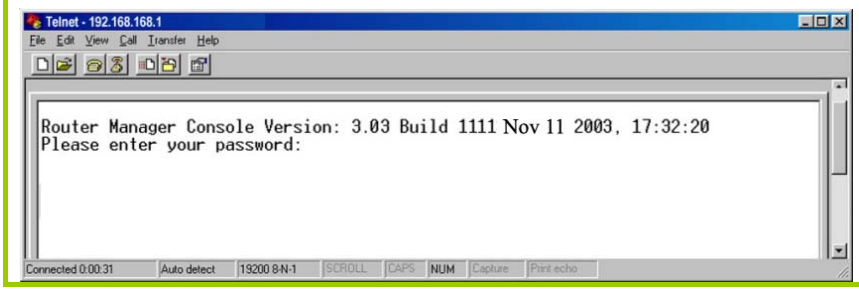
To Refresh User Management list click the **Refresh** button.

Access the TELNET Command Line Interface

You may connect to the CLI (Command Line Interface) via a TELNET session to the default IP **192.168.168.1** Microsoft TELNET command is shown here but any TELNET client can be used.

1. Enter **C:\WINDOWS\TELNET 192.168.168.1** at DOS prompt and the TELNET application will launch and connect.

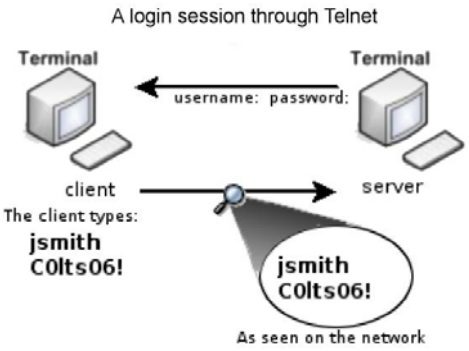
2. At the login prompt, type in the default password "password" and press enter. You will then login to the CLI.

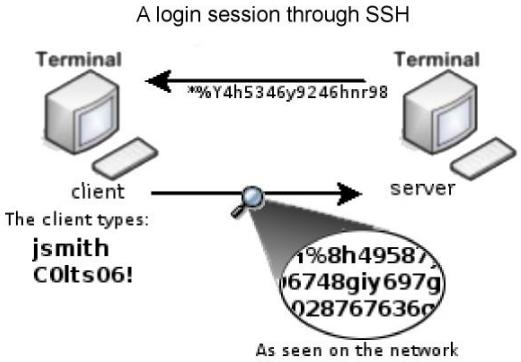


Access the Secure Shell Host Command Line Interface

SSH provides the best remote access security using different forms of encryption and ciphers to encrypt sessions, and providing better authentication facilities and features that increase the security of other protocols.

An encrypted connection like SSH is not viewable on the network. The server can still read the information, but only after negotiating the encrypted session with the client.

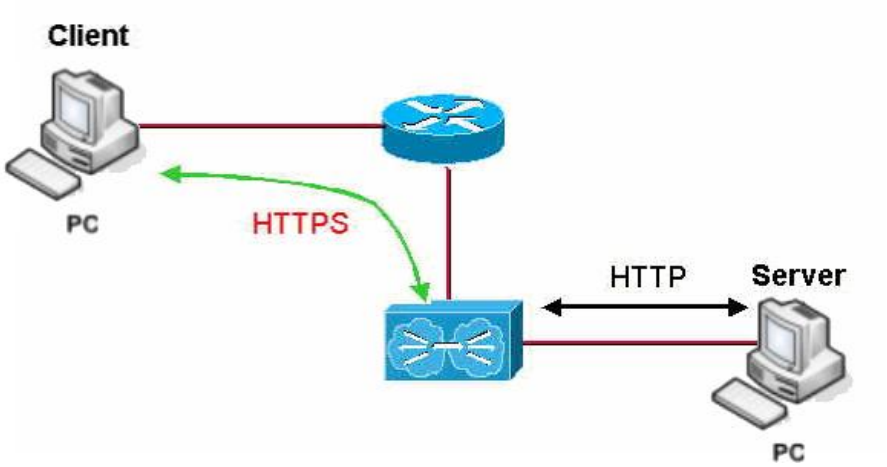




SSH CLI has a command line interface.

```
Generating public/private dsa key pair.
Enter file in which to save the key (/home/localuser/.ssh/id_dsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/localuser/.ssh/id_dsa.
Your public key has been saved in /home/localuser/.ssh/id_dsa.pub.
The key fingerprint is:
93:58:20:56:72:d7:bd:14:86:9f:42:aa:82:3d:f8:e5 localuser@mybox.home.com
```

Set the WEB Mode



The access point supports HTTPS (SSL) featuring additional authentication and encryption for secure communication, in addition to the standard HTTP.

Step 1:

Select **Web Management Setup** from the **CONFIGURATION** menu.

Step 2:

1. Select whether to set web server to HTTP or HTTPS (SSL) mode.
2. Click **Apply**.

Changes will be effected after reboot.

Setup SNMP

The Simple Network Management Protocol (SNMP) is a set of communication protocols that separates the management software architecture from the hardware device architecture.

Step 1:
Select **SNMP Setup** from the **CONFIGURATION** menu.

Step 2:
Select **Enable** from the **SNMP State** drop-down list.

The **Read Password** is set to *public* while the **Read/Write Password** is set to *private* by default.

Step 3:
Click on the **Apply** button.

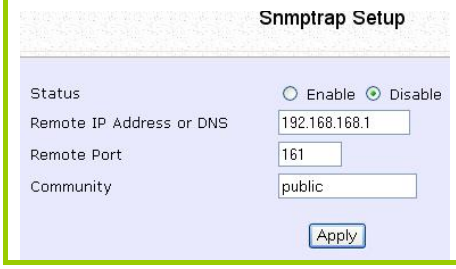
Setup SNMP Trap

The SNMP Trap saves network resources through eliminating the need for unnecessary SNMP requests by providing notification of significant network events with unsolicited SNMP messages.

Step 1:
Select **SNMP Setup** from the **CONFIGURATION** menu.

Step 2:

1. Select whether to **Enable** or **Disable** the SNMP Trap.
2. Enter the **Remote IP Address or DNS**.
3. Enter the **Remote Port**.
   This is the port number of the SNMP manager.
4. Enter the **Community**.
   This is used to authenticate message, and is included in every packet that is transmitted between the SNMP manager and agent.
5. Click on the **Apply** button.



Use MAC Filtering

MAC Filtering acts as a security measure by restricting user network access according to MAC address. Each WLAN or radio card supports up to 16 virtual access points and has its own MAC address listing.

NOTE
MAC Filtering will not filter any MAC address from the Ethernet port.

Add a MAC Address to the MAC Address List

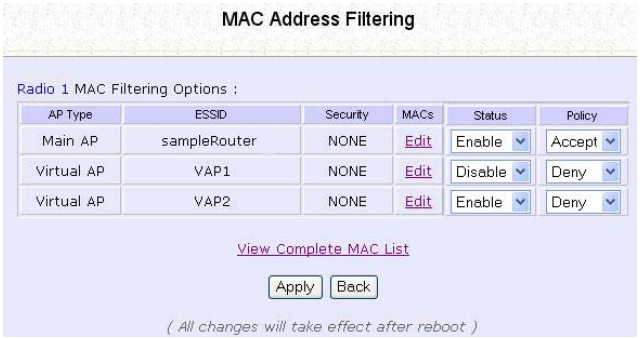
Step 1:

Select **MAC Filtering** from **WLAN Setup**.
The MAC Address Filtering page displays.

In this page you may also set the MAC Filtering Status to **Enable** or **Disable** for access points and set the Policy to either **Accept** or **Deny** MAC addresses.

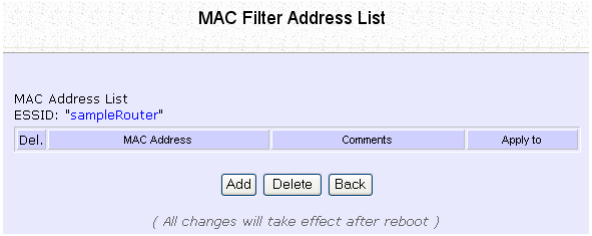
	MAC Filtering set to **Enable** with Policy to **Accept** only the MAC addresses in the MAC Filter Address List and deny all other MAC addresses.
	MAC Filtering set to **Enable** with Policy to **Deny** all the MAC addresses in the MAC Filter Address List and accept all other MAC addresses.
	MAC Filtering set to **Disable**. Whether Policy is set to **Enable** or **Deny** does not matter.
	MAC Filtering set to **Disable**. Whether Policy is set to **Enable** or **Deny** does not matter.

Click the **Edit** button.



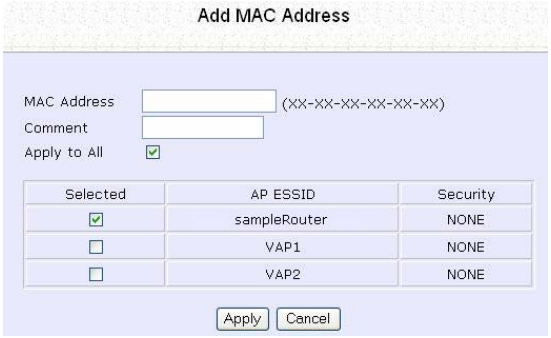
Step 2:

MAC Filter Address List page displays.
Click the **Add** button.



Step 3:

The Add MAC Address page displays.

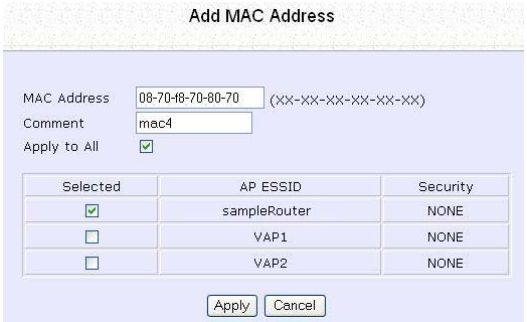


Step 4:

Enter the MAC Address of the client in the format **xx-xx-xx-xx-xx-xx**, where x can take any value from 0 to 9 or a to f.
Enter the Comment. This describes the MAC Address you have entered.

To apply to all virtual access points, check **Apply to All**.
To apply to specific virtual access point, select the checkbox of the corresponding access point.

Click the **Apply** button.



Step 5:

MAC Filter Address List page displays with updated MAC Address List.

NOTE

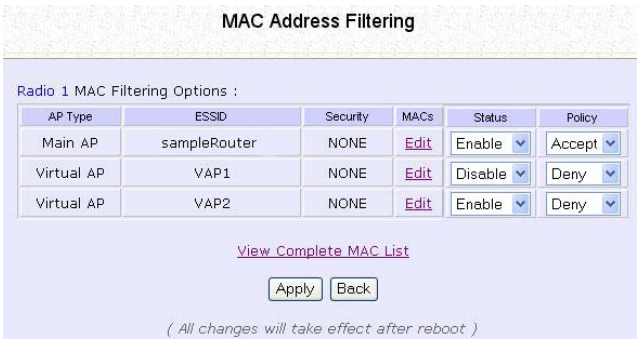
Please reboot to effect all changes and new MAC address entries.

Delete a MAC Address From All Access Points

Step 1:

Select **MAC Filtering** from **WLAN Setup**.
The MAC Address Filtering page displays.

Select **View Complete MAC List**.



Step 2:

The MAC Filter Address List page displays.
Select the checkbox of the MAC address you wish to delete.

Click the **Delete** button.

Step 3:

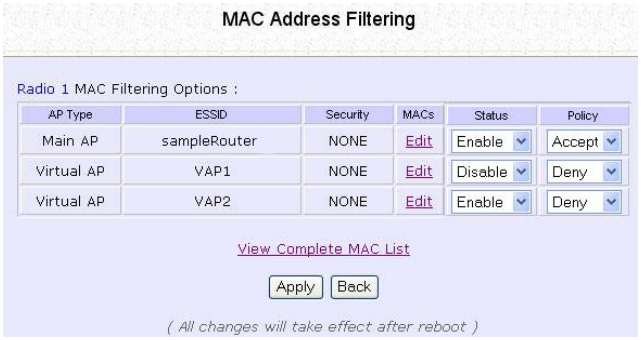
The MAC Filter Address List page displays with updated MAC Address List.

Delete a MAC address from individual access point

Step 1:

Select **MAC Filtering** from **WLAN Setup**.
The MAC Address Filtering page displays.

Select **Edit** for the corresponding access point.



Step 2:

The MAC Filter Address List page displays.
Select the checkbox of the MAC address you wish to delete.

Click the **Delete** button.

Step 3:

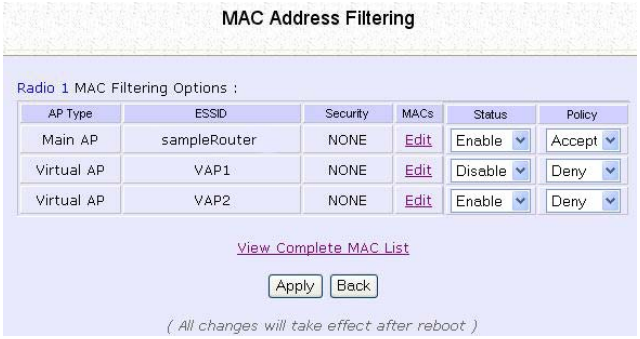
The MAC Filter Address List page displays with updated MAC Address List.

Edit MAC Address from the MAC Address List

Step 1:

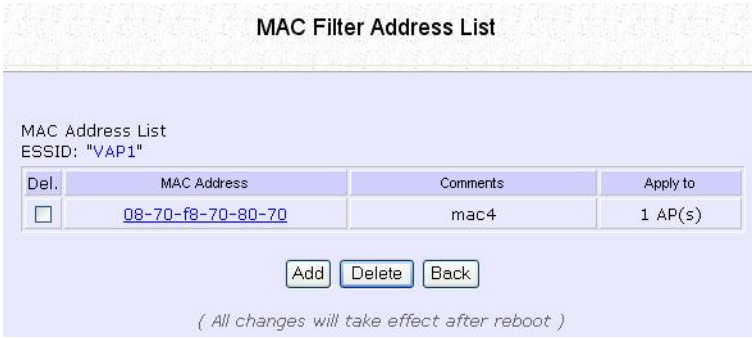
Select **MAC Filtering** from **WLAN Setup**.
The MAC Address Filtering page displays.

Select **Edit**.



Step 2:

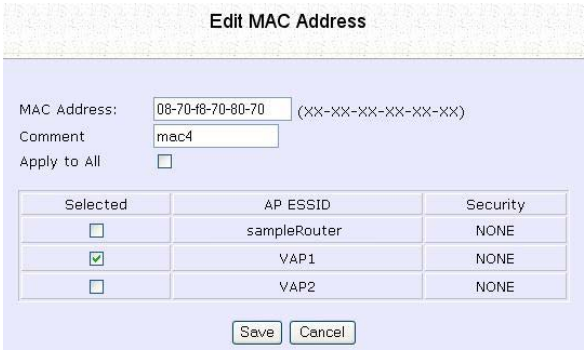
MAC Filter Address List page displays.
Select the MAC address to edit.



Step 3:

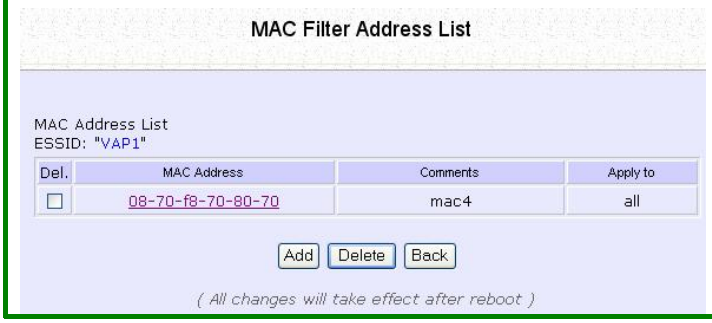
The Edit MAC Address page displays.
Edit the MAC address settings accordingly.

Click the **Save** button.



Step 4:

The MAC Filter Address List page displays with updated MAC Address List.



Perform Advanced Configuration

Setup Routing

(Available in Wireless Routing Client and Gateway modes)

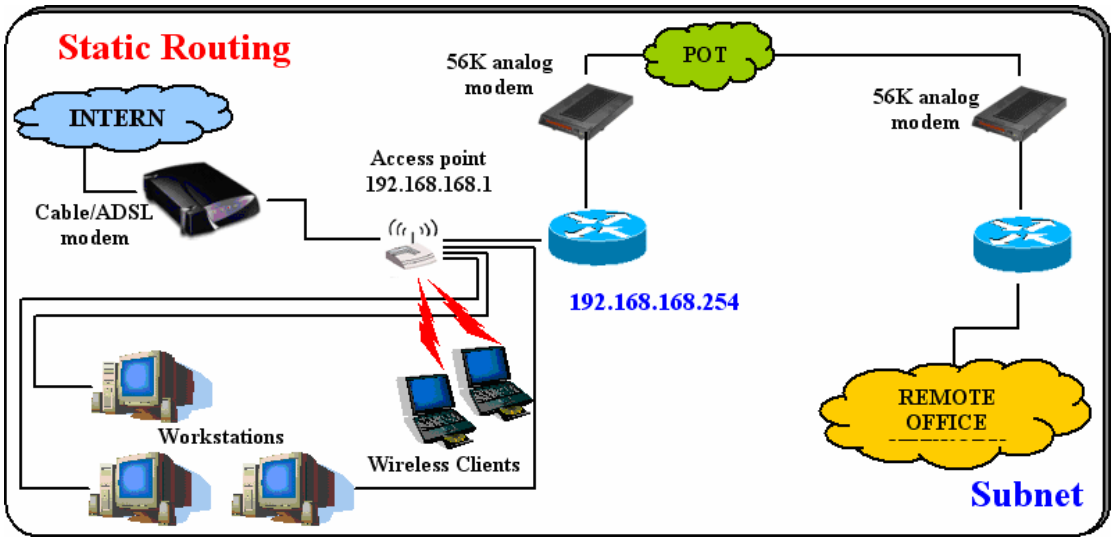
The access point allows you to add a static routing entry into its routing table to re-route IP packets to another access point. This is useful if your network has more than one access point.

Important:

You do NOT need to set any routing information if you are simply configuring the access point for broadband Internet sharing. The wrong routing configuration might cause the access point to function improperly.

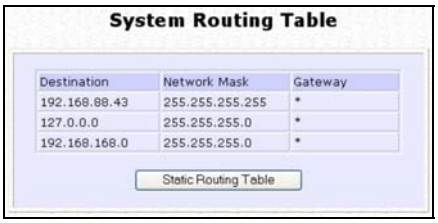
In this network, the main office of subnet 192.168.168.0 contains two routers: the office is connected to the Internet via the access point (192.168.168.1) and to the remote office via 192.168.168.254 The remote office resides on subnet 192.168.100.0

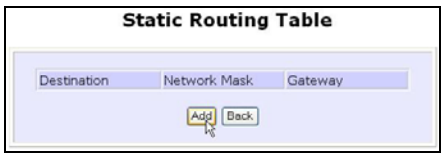
You can add a static routing entry into the access point routing table so that IP packets from the clients in the main office with a destination IP address of 192.168.100.X where X is any number from 2 to 254 will be re-routed to the router, which acts as the gateway to that subnet.



Configure Static Routing

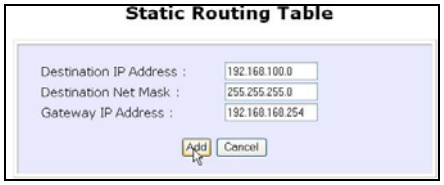
Step 1:
Select **Routing** from the **CONFIGURATION** command menu. The **System Routing Table** page displays. Initially the table contains the default routing entries of the access point.



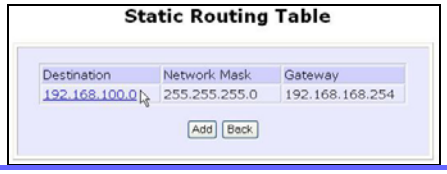


Step 2:
Click on the **Static Routing Table** button, then click the **Add** button.

Step 3:
Enter the **Destination IP Address**, **Destination Net Mask**, and **Gateway IP Address**, and click the **Add** button.



The **Static Routing Table** reflects the entry.



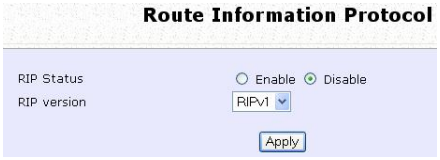
Use Routing Information Protocol

(Available in Wireless Routing Client and Gateway modes)

RIP (Routing Information Protocol) allows information to be exchanged within a set of routers under the same administration.

RIPv1 bases the path used to pass traffic between routers on the fewest number of hops between the source and destination IP addresses within a packet. Routers broadcast RIPv1 information on all router interfaces every 30 seconds and process the information from other routers to determine if a better path is available. RIPv2 is more secure, and performs broadcasting and the assignment of IP address more efficiently.

Step 1:
Under the **CONFIGURATION** command menu, click on **Routing** to be brought to **Route Information Protocol**.



Step 2:
Select to **Enable RIP Status**.

Select either RIPv1 or RIPv2.

On this page, click the **Apply** button.

Use Network Address Translation

(Available in Wireless Routing Client and Gateway modes)

NAT (Network Address Translation) allows multiple PCs in a private network to share a single public IP address by using different TCP ports to identify requests coming from different PCs, and is enabled by default. Computers in the private LAN behind the access point will not be directly accessible from the Internet. However, employing virtual servers allows the hosting of Internet servers by using IP/ Port Forwarding and De-Militarized Zone hosting.

Step 1:
Select **NAT** from the **CONFIGURATION** command menu. To disable it, select the **Disable** radio button.]

Step 2:
Click the **Apply** button to effect the setting.

Important:
NAT provides for effective broadband Internet sharing, do NOT disable NAT unless it is absolutely necessary.

Configure Virtual Servers Based on DMZ Host

DMZ (De-Militarized Zone) makes specific PCs in a NAT-enabled network directly accessible from the Internet.

With NAT, the access point keeps track of which client is using which port number and forwards Internet replies to the client according to the port number in the reply packet. Reply packets with unrecognized port numbers are discarded, but with DMZ, these packets are forwarded to the DMZ-enabled PC instead.

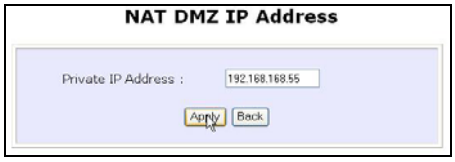
Step 1:
Select **NAT** from the **CONFIGURATION** command menu.

Step 2:
Click on the **DMZ** button in **Advanced NAT Options**.

Step 3:
Enter the **Private IP Address** of the DMZ host on the **NAT DMZ IP Address** page.

To disable DMZ, enter **0.0.0.0**

Click the **Apply** button.



NOTE

1. DMZ may not function properly if the DMZ host IP address is changed due to DHCP, therefore, Static IP Address configuration is recommended for the DMZ host.

2. Please note that the DMZ host is susceptible to malicious attacks as ALL of its ports are exposed to the Internet.

Configure Virtual Servers Based on Port Forwarding

Virtual Server based on Port Forwarding forwards Internet requests arriving at the access point WAN interface to specific PCs in the private network based on their ports.

Step 1:

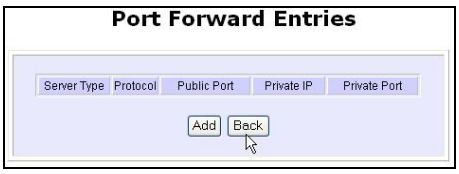
Select **NAT** from the **CONFIGURATION** command menu.

Step 2:

Click the **Port Forwarding** button in **Advanced NAT Options**.

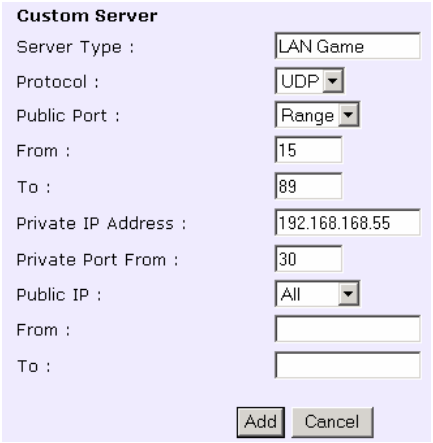
Step 2:

Click the **Add** button on the **Port Forward Entries** page.



Step 3:

In the **Add Port Forward Entry** page, you can set up a Virtual Server for a **Known Server** type by selecting from a drop-down menu or you can define a **Custom Server**.



Known Server

Server Type : Select from the drop-down list of known server types:
- HTTP
- FTP
- POP3
- Netmeeting

Private IP Address : Specify the LAN IP address of the server PC running within the private network.

Public IP : Select **All**, **Single**, or **Range** from the dropdown list.

From : Enter the beginning of the range.

To : Enter the end of the range.

Custom Server

Server Type : Define a name for the server type you wish to configure.

Protocol : Select either **TCP** or **UDP** protocol type from the dropdown list.

Public Port : Select whether to define a single port or a range of public port numbers to accept.

From : Starting public port number

To : Ending public port number. If the Public Port type is Single, this field will be ignored.

Private IP Address : Specify the IP address of the server PC running within the private network.

Private Port From : Starting private port number. The ending private port number will be calculated automatically according to the public port range.

Public IP	:	Select **All**, **Single**, or **Range** from the dropdown list.
From	:	Enter the beginning of the range.
To	:	Enter the end of the range.

For example to set up a web server on a PC with IP address 192.168.168.55, set the **Server Type** as HTTP and set the **Private IP Address** as **192.168.168.55**, then click on the **Add** button.

Configure Virtual Servers based on IP Forwarding

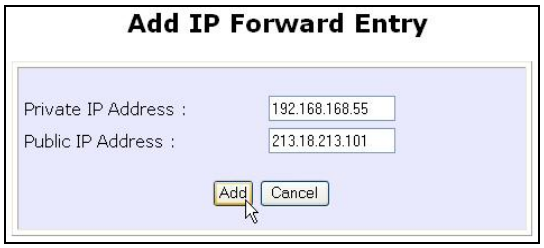
If you are subscribed to more than one IP address from your ISP, virtual servers based on IP forwarding can forward all Internet requests regardless of the port number to defined computers in the private network.

Step 1:
Select **NAT** from the **CONFIGURATION** command menu.

Step 2:
Click the **IP Forwarding** button in **Advanced NAT Options**.

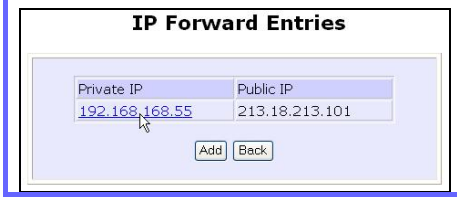
Step 3:
In the **Add IP Forward Entry** page, enter the **Private IP Address** and **Public IP Address**.

In this example, we would like all requests for 213.18.213.101 to be forwarded to a PC with **Private IP Address** 192.168.168.55.



NOTE
Please ensure that you are subscribed to the **Public IP Address** you intend to forward from.

Step 4:
Click the **Add** button.



Step 5:
The **IP Forward Entries** page reflects your new addition.

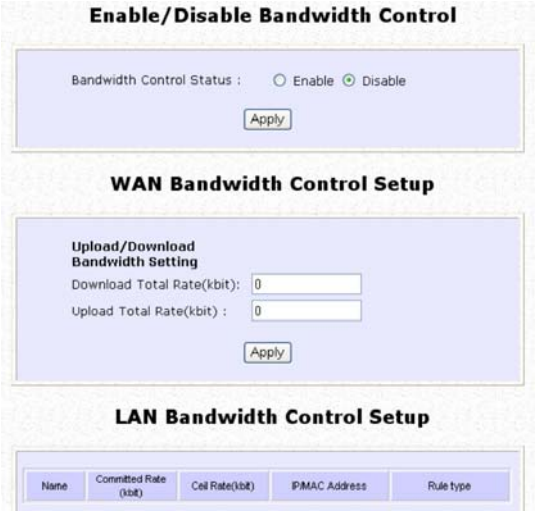
Control the Bandwidth Available

(Available in Wireless Routing Client mode)

You can control the bandwidth available to subscribers to prevent the occurrence of massive data transfer that can slow down the network.

Enable Bandwidth Control

Step 1:
Select **Bandwidth Control** from the **CONFIGURATION** command menu.



Step 2:
Bandwidth Control is disabled by default, select **Enable**, and click the **Apply** button.

Configure WAN Bandwidth Control

The **Upload / Download Bandwidth Setting** can limit throughput to the defined rates regardless of the number of connections.

Step 1:
Select **WAN Bandwidth Control Setup** from the **Bandwidth Control** sub-menu from the **CONFIGURATION** command menu.

Step 2:
Enter the **Download Total Rate** and **Upload Total Rate**.
The default values are 0, which indicates that there is no bandwidth limit.

Click the **Apply** button.

Configure LAN Bandwidth Control

Bandwidth Control can also limit LAN users' throughput.

Step 1:
Select **LAN Bandwidth Control Setup** from the **Bandwidth Control** sub-menu from the **CONFIGURATION** command menu.

Step 2:
Click the **Add** button to create the bandwidth rule for LAN user.

Step 3:
Click the **Add** button to create the rule for LAN user's bandwidth control.

Parameters	Description
Rule Name	You can set a name for the bandwidth control rule.
Committed Rate (kbit)	Minimum bandwidth rate of throughput. **NOTE:** The sum of the **Committed Rate** of all the rules should not exceed the total rate available.
Ceiling Rate (kbit)	Capped bandwidth rate of throughput.
Rule Type	This defines whether the bandwidth control rule works on downloads or uploads, and whether it works by IP address or MAC address.
IP/MAC Address	IP address or MAC address for the bandwidth control rule, corresponding to whether the Rule Type is defined by IP address or MAC address.

Step 4:
Click the **Add** button.

Repeat Steps 1 to Step 3 to add new bandwidth rule.

Perform Remote Management

(Available in Wireless Routing Client and Gateway modes)

You can use the access point web-based interface from the Internet to manage your network remotely.

Setup Remote Management

Step 1:
Select **Remote Management** from the **CONFIGURATION** command menu.

Step 2:
To disable Remote Management, set **Remote Http Port** to 0

To enable Remote Management, set **Remote Http Port** to an unused port number. It is recommended that you avoid using port number 80 as it is blocked by some ISPs.

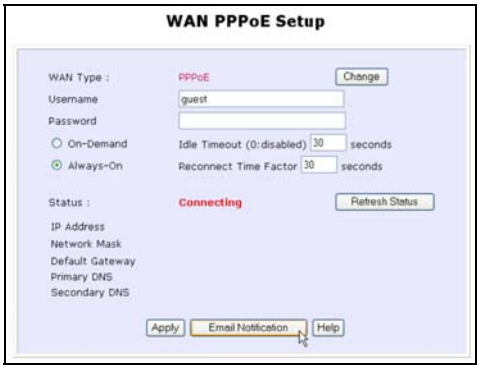
In Gateway mode, **Remote Management** is enabled with Port 88 and the Ethernet port becomes a WAN port. To continue using it, open the web manager using the WAN IP with Port 88.
Example: For WAN IP 100.100.100.1 use http://100.100.100.1:88

NOTE

It is recommended that the default password is replaced with a new password changed periodically to prevent unauthorized access.

Setup Email Notification

This feature notifies you by email if there is a change in the WAN IP address that was supplied to you.



Step 1:
Select **WAN PPPoE Setup** or **WAN PPTP Setup** from the **CONFIGURATION** command menu.

Step 2:
Click on the **Email Notification** button.

Step 3:
Select to **Enable** Email Notification and enter the following details:

- **Email address of Receiver:**

Email address of the receiver to whom the message would be sent.

- **IP address of Email Server:**

IP address of the SMTP server through which the message will be sent.
It is recommended that you use your ISP's SMTP server.

- **User Name:**

User Name for the specified email account.
This is necessary if authentication is required.

- **Password:**

Pass word for the specified email account.
This is necessary if authentication is required.

- **Email address of Sender:**

Email address to be displayed as the sender.

Step 4: Specify whether the SMTP server **Needs Authentication** or not by setting the checkbox accordingly. By default it is not selected.
Step 5: Click on the **Apply** button.

Using Static Address Translation

(Available in Wireless Routing Client mode)

If you use a notebook for work in the office, you most probably bring it home to connect to the Internet as well. Since it is most likely that your office network and home network broadband-sharing network subnets are configured differently, you would have the hassle of reconfiguring your TCP/IP settings every time you use the notebook in a different place. Static Address Translation allows you to bypass this hassle.

With SAT, if you try to access the Internet on your notebook from home but with your office TCP/IP settings, the notebook will try to contact the IP address of your office gateway to the Internet. When the access point finds that the notebook is trying to contact a device lying on a different subnet from that of the home network, it would inform the notebook that the gateway to the Internet is in fact the access point itself. From then the notebook would contact the access point for access to the Internet without any change to the TCP/IP settings.

NOTE

For SAT to function properly:

1. The IP address of the notebook should belong to a different subnet from the LAN IP address of your access point.

2. The <Default Gateway> in the TCP/IP settings of your notebook should NOT be left blank.

Step 1:
Select **Static Address Translation** from the **Home User Features** command menu.

Step 2:
Select whether to **Enable** or **Disable** SAT, and click the **Apply** button.

SAT is disabled by default.

Dynamic DNS Setup

With Dynamic IP Internet connection, keeping track of your public IP address for Internet communication is complicated as it is changed regularly by the ISP. If you are doing some web hosting on your computer, Internet users will have to keep up with the changing IP address to access your computer.

When you sign up for an account with a Dynamic Domain Name Service (DDNS) provider, it will register your permanent domain name, for example: **MyName.Domain.com** You can configure the access point to automatically contact your DDNS provider whenever it detects a change in its public IP address. The access point will then log on to update your account with its latest public IP address.

If a user enters your address: **MyName.Domain.com** into their web browser, this request would go to the DDNS provider which will then redirect the request to your computer, regardless of the IP address it is currently assigned by your ISP.

To enable/disable Dynamic DNS Setup

Step 1:
Select **Dynamic DNS Setup** from the **Home User Features** command menu.

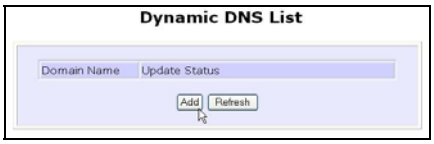
Step 2:
Select to **Enable** or **Disable** Dynamic DNS.
Dynamic DNS is disabled by default.

Click the **Apply** button.

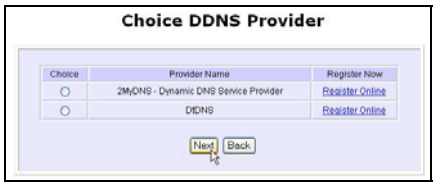
To manage Dynamic DNS List

Step 1:
Select **Dynamic DNS Setup** from the **Home User Features** command menu.

Step 2:
If you have created a list earlier, click on the **Refresh** button to update the list.



Step 3:
To add a new Dynamic DNS, click on the Add button.
The **Choice DDNS Provider** page appears.
There are two default providers that you can use.
The parameters are explained below:



- **Choice**:

Indicates your preferred DDNS provider.

- **Provider Name:**

Name of your preferred DDNS provider.

- **Register Now:**

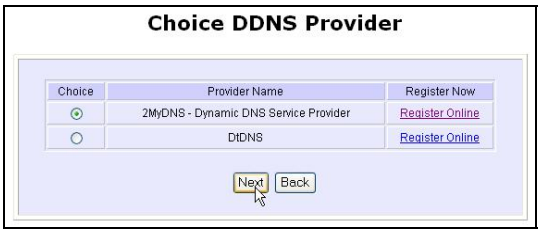
Allows you to go to the website of your preferred DDNS provider where you can register your account.

2 DDNS providers are predefined for you. You need to be connected to the Internet to register your DDNS account.

Select **2MyDNS – Dynamic DNS Service Provider** as DDNS Service Provider:

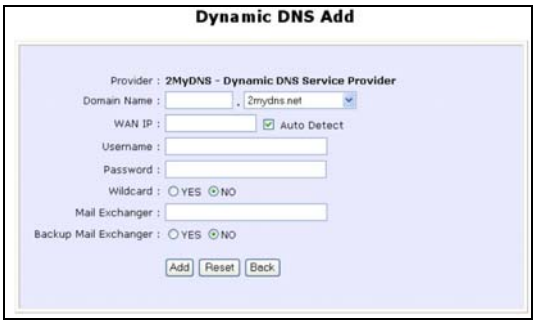
Step 1:
Under the **Choice** column in the **Choice DDNS Provider** list, check the radio button next to the **2MyDNS – DNS Service Provider** entry.

Click on the **Next** button.



Step 2:
Enter your **Domain Name**.

Step 3:
The **Auto Detect** checkbox is selected by default.
The **WAN IP** field is empty by default.
These default settings should be used if dynamic WAN IP connection is used.



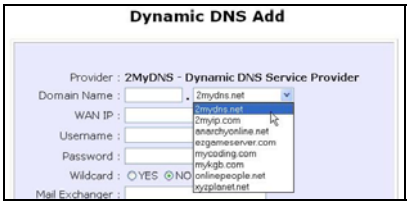
If your ISP connection uses dynamic WAN IP:
Select the **Auto Detect** checkbox to let the DDNS server learn your current WAN IP address.
Enter your DDNS account **Username** and **Password**.

If your ISP connection uses a fixed WAN IP:
Enter the IP address in the **WAN IP** field.
Deselect the **Auto Detect** checkbox.
The access point will update the DDNS server with the specified WAN IP.

Step 4: Optional
Your hostname will be allowed multiple identities if wildcard is enabled.
For example, if you register: **mydomain.2mydns.net**, users looking for www.mydomain.2mydns.net or ftp.mydomain.2mydns.net can still reach your hostname.

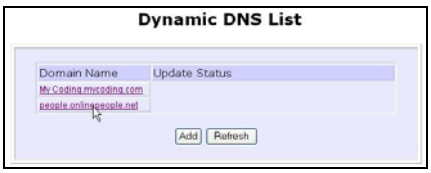
Step 5: Optional
In the Mail Exchanger field, enter the Static WAN IP address of the mail server configured to handle email for your domain.

Select **Backup Mail Exchanger** to enable this service.

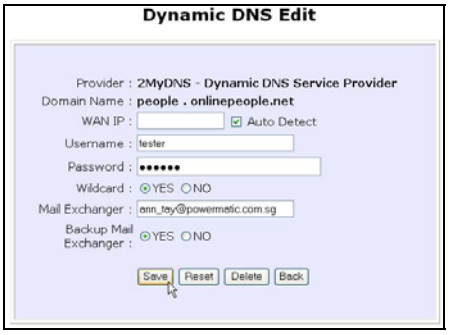


Step 6:
Click on the Add button.

The new domain is added to the Dynamic DNS list table. It will appear as a hyperlink that you can click to go back to the Dynamic DNS Edit page.



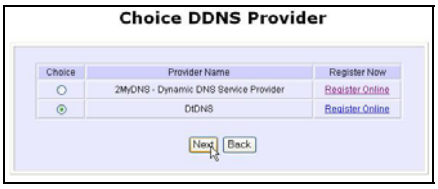
Step 7:
From the Dynamic DNS Edit page you can update or reset the parameters, or delete the domain name.



Select **DtDNS as** DDNS Service Provider:

Step 1:
Under the **Choice** column in the **Choice DDNS Provider** list, check the radio button next to the **DtDNS** entry.

Click on the **Next** button.



Step 2:
Enter your **Domain Name**.

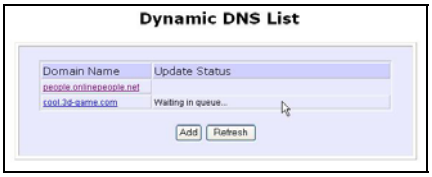
Step 3:
The **Auto Detect** checkbox is selected by default.
The **WAN IP** field is empty by default.
These default settings should be used if dynamic WAN IP connection is used.

If your ISP connection uses dynamic WAN IP:
Select the **Auto Detect** checkbox to let the DtDNS server learn your current WAN IP address.
Enter your DtDNS account **Username** and **Password**.

If your ISP connection uses a fixed WAN IP:
Enter the IP address in the **WAN IP** field.
Deselect the **Auto Detect** checkbox.
The access point will update the DtDNS server with the specified WAN IP.

Step 4:
Then click on the **Add** button.

Step 5:
While the new domain name is being added to the list, the message 'Waiting in queue…" will be displayed under the **Update Status** column of the **Dynamic DNS List** table.



Use the Wireless Extended Features

Set Preferred APs

(Available in Client Mode)

When there is more than one AP with the same SSID, the Preferred APs function allows you define the MAC address of the APs in order of preference.
The MAC address at the top of the Preferred APs list has the highest connection preference, and the MAC address at the bottom has the lowest connection preference.

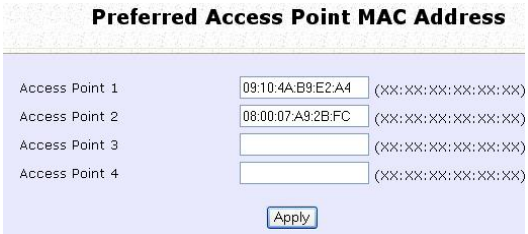
Follow these steps to specify your preferred APs.

Preferred APs

1

1. Click on WLAN Setup from the CONFIGURATION menu.

2. Select Preferred APs.



2

1. Enter the MAC addresses of the preferred APs.

2. Click Apply to effect the settings.

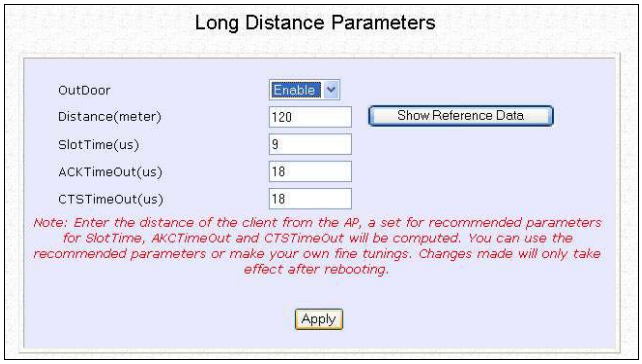
Get Long Distance Parameters

The access point can calculate and display suggested values for certain parameters to use to ensure that efficient wireless communication between physically distant access points.

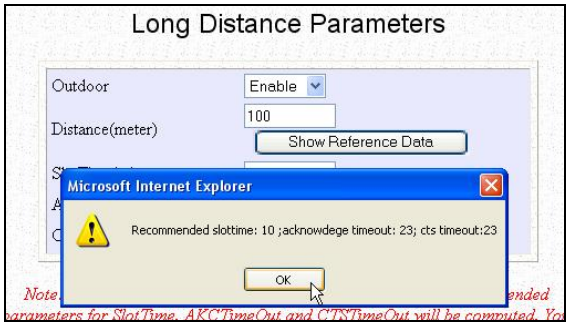
Select **Advanced** from **WLAN Setup** under **Configuration**.

Click on the **Long Distance Parameters** button under the **Extended Features** section.

Select to **Enable** the **Outdoor** function.


Long Distance Parameters
OutDoor
Enable
Distance(meter)
120
Show Reference Data
SlotTime(us)
9
ACKTimeOut(us)
18
CTSTimeOut(us)
18
Note: Enter the distance of the client from the AP, a set for recommended parameters for SlotTime, AKCTimeOut and CTSTimeOut will be computed. You can use the recommended parameters or make your own fine tunings. Changes made will only take effect after rebooting.
Apply

The access point can automatically calculate the values of the parameters to input based on the distance between your access point and the other wireless device. Enter the distance in meters and click on the **Show Reference Data** button.

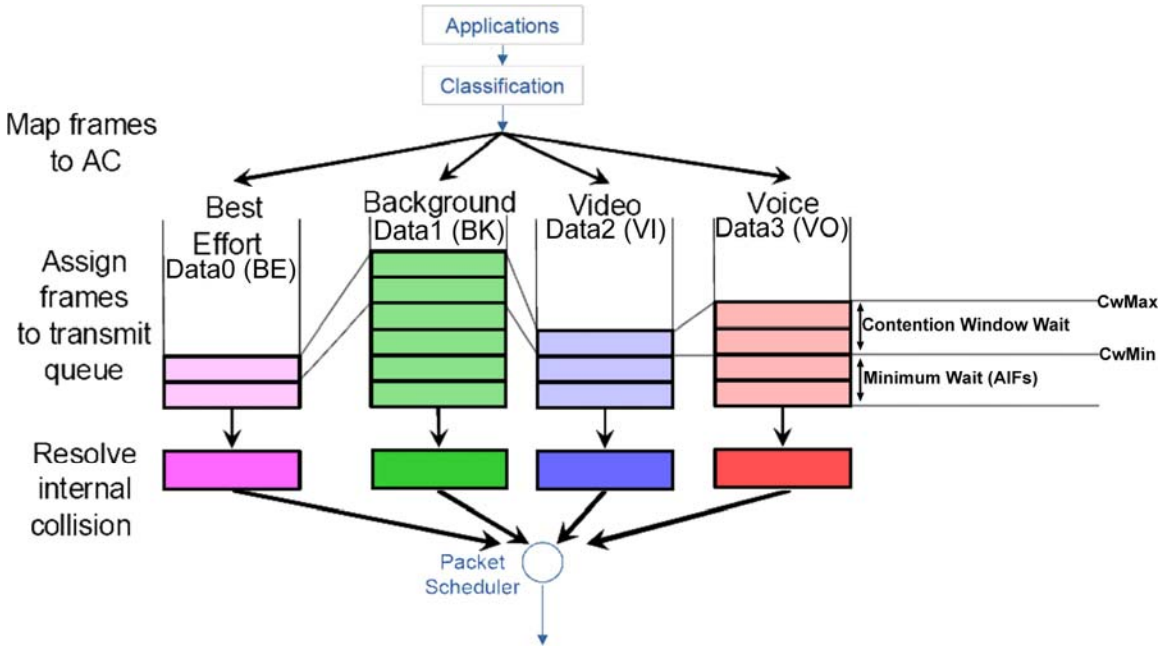


You can enter the parameters based on the recommended values in the pop-up window, click on the **Apply** button to update the changes.

Long Distance Parameters	Description
Outdoor	If set to Enable, the Outdoor parameters will be configured for outdoor communication over short or long distances as specified, it is disabled by default.
Distance	Determines the distance between your access point and the remote access point in meters.
Slot Time	The amount of time is divided and each unit of time is called one slot time.
ACK Timeout	Determines the timeout allowed for the sending client to receive the acknowledgment response from the receiving client. If no acknowledgment packet is received within this period, the sender will assume the receiver has not received the packet and will attempt to resend.
CTS Timeout	Clear-to-Send Timeout is the time the wireless sender will wait for a CTS packet signaling that the channel is idle and it can start data transmission. If no CTS packet is received within this period, the sender will assume the channel is busy and will wait before trying to send again.

Set Wireless Multimedia

Wireless Multimedia (WMM) is a QoS (Quality of Service) standard in IEEE802.11E that we have adopted to improve and support the user experience for multimedia, video, and voice applications by prioritizing data traffic. QoS can be realized through 4 different Access Categories (AC). Each AC type consists of an independent transmit queue, and a channel access function with its own parameters.



Follow these steps to change the setup Wireless Multimedia on your access point.

Step 1:

1. Click on **WLAN Setup** from the **CONFIGURATION** menu.
2. Select Advanced.

Step 2:

Click on the **WMM Settings** button.

Step 3:

Select to Enable **Wireless Multimedia (WMM)**

Enter the desired WMM parameters. Using the default parameters is recommended.

Click **Apply** to apply the WMM settings, click **Default** to reset all parameters to default, or click **Back** to discard any changes and return to WLAN Basic Setup page.

WMM Parameters (for advanced users)	
AIFs (Arbitrary Inter-Frame Space)	Arbitrary Inter-Frame Space is the minimum wait time interval between the wireless medium becoming idle and the start of transmission of a frame over the network.
Cwmin (Contention Window Minimum)	Contention Window Minimum is the minimum random wait time drawn from this interval or window for the backoff mechanism on the network.
CwMax (Contention Window Maximum)	Contention Window Maximum is the maximum random wait time drawn from this interval or window for the backoff mechanism on the network.
TxOp limit (Transmit Opportunity Limit)	Transmit Opportunity limit specifies the minimum duration that an end-user device can transmit data traffic after obtaining a transmit opportunity. TxOp limit can be used to give data traffic longer and shorter access.
NoAck (No Acknowledgement)	No Acknowledgement provides control of the reliability of traffic flow. Usually an acknowledge packet is returned for every packet received, increasing traffic load and decreasing performance. Enabling No Acknowledgement cancels the acknowledgement. This is useful for data traffic where speed of transmission is important.
ACM (Admission Control Mandatory)	Admission Control Mandatory enables WMM on the radio interface. When ACM is enabled, associated clients must complete the WMM admission control procedure before access.
BE (Best Effort)	Parameters for Data0 Best Effort. Best Effort data traffic has no prioritization and applications equally share available bandwidth.
BK (Background)	Parameters for Data1 Background. Background data traffic is de-prioritized and is mostly for backup applications, or background transfers like backup applications or background transfers like bulk copies that do not impact ongoing traffic like Internet downloads.
VI (Video)	Parameters for video data traffic.
VO (Voice)	Parameters for voice data traffic.

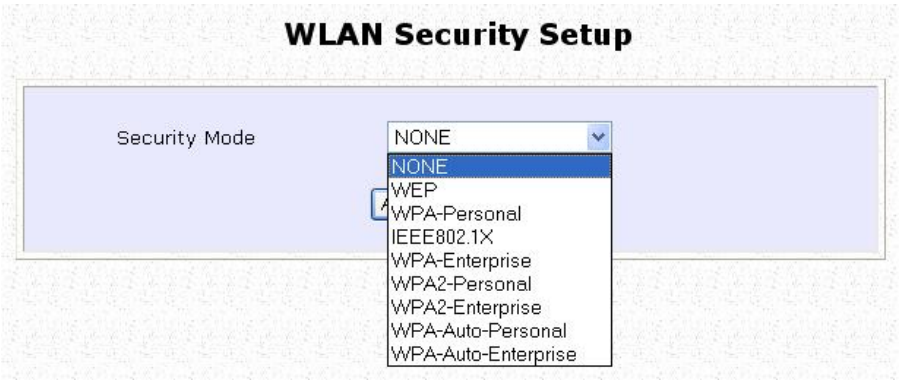
Secure your Wireless LAN

Step 1:
Select **Security** from **WLAN Setup** under the **CONFIGURATION** menu.

Step 2:

Make a selection from the **Security Mode** drop-down list. The **Security Mode** is set to **NONE** by default.

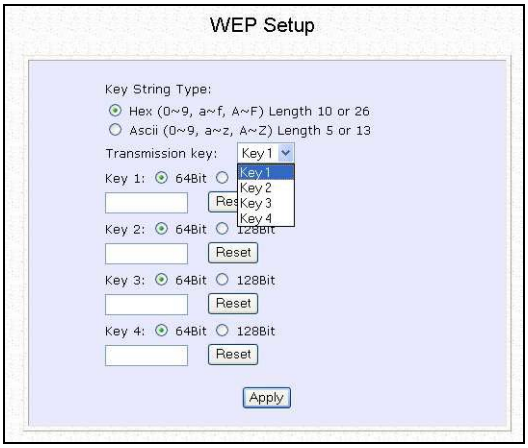
Click on the **Apply** button.



NOTE
All nodes in your network must share the same wireless settings in order to communicate.

Setup WEP

At the **WEP Setup** page,



Step 1:

Specify the **key entry type**, by selecting either:

- **Use Hexadecimal:**
- **Use ASCII**

Step 2:

Select the **Transmission Key** from the pull down menu:

- **Key 1**
- **Key 2**
- **Key 3**
- **Key 4**

The access point lets you define up to four different transmission keys. It defines a set of shared keys for network security. You must enter at least one WEP key to enable security using a shared key.

Step 2:

Select the **length** of each encryption key:

- **64- bit WEP**

10 hexadecimal or 5 ASCII Text

- **128-bit WEP**

26 hexadecimal or 13 ASCII Text

To clear the values that you have entered in the field, click on the **Reset** button.

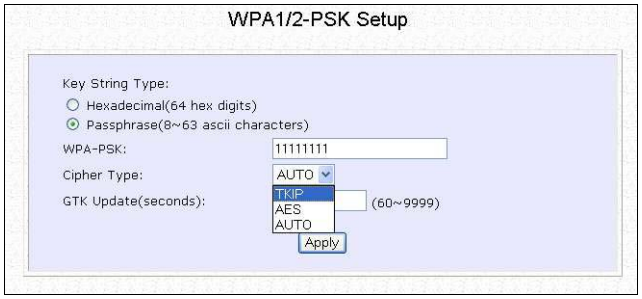
Click on the **Apply** button and reboot your access point.

Setup WPA-Personal

(Available in Access Point mode)

Follow these steps if you have activated the **WPA-Personal**, **WPA2-Personal** or **WPA-Personal-AUTO** security modes.

At the **WPA1/2-PSK Setup** page,



Step 1:

Specify the **key entry type**, by selecting either:

- **Passphrase (Alphanumeric characters)**
- **Hexadecimal**

Step 2:

Fill in the pre-shared network key:
If you are using the **Passphrase** format, your entry can consist of a minimum of 8 alphanumeric characters or a maximum of 63 alphanumeric characters.

Otherwise, when using the **Hexadecimal** format, your entry MUST consist of 64 hexadecimal characters.

Step 3:

For WPA-Personal
Set the **Cipher Type** to **TKIP**.
WPA replaces WEP with a strong encryption technology called Temporal Key Integrity Protocol (TKIP) with Message Integrity Check (MIC).

For WPA2-Personal
Set the **Cipher Type** to **AES**.
Advanced **E**ncryption **S**tandard (AES) is a stronger symmetric 128-bit block data encryption technique. AES is a requirement of WPA2 under the IEEE 802.11i standard.

For WPA-Personal-AUTO
Set the **Cipher Type** to **Auto** to allow the access point to automatically detect the cipher type to use.

Step 4:

Enter the **GTK (Group Transient Key) Updates**.
This is the length of time after which the access point will automatically generate a new shared key to secure multicast/broadcast traffic among all stations that are communicating with it. By default, the value is 600 seconds.

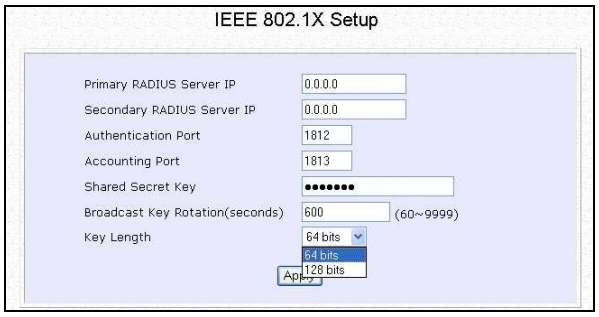
Step 5:

Click the **Apply** button and reboot your system, after which your settings will become effective.

Setup 802.1x/RADIUS

(Available in Access Point mode)

At the IEEE 802.1x Setup page,



Step 1:

Key in the IP address of the **Primary RADIUS Server** in your WLAN. You can optionally add in the IP address of a **Secondary RADIUS Server**, if any.

The RADIUS authentication server MUST be in the same subnet as the access point.

Step 2:

By default, the value for **Authentication Port** number is **1812**. You can leave this value as it is. This value must be set to be the same as the one in the RADIUS server.

Step 3:

By default, the value for **Accounting Port** number is **1813**. You can leave this value as it is. This value must be set to be the same as the one in the RADIUS server.

Step 4:

Enter the **Shared Secret Key** in the field provided.

Step 5:

By default, the **Broadcast Key Rotation** is set as **600** seconds. You may leave this value as its default setting.

Step 6:

Select the **length** of each encryption key:

- **64- bit**

10 hexadecimal or 5 ASCII Text

- **128-bit**

26 hexadecimal or 13 ASCII Text

Step 7:

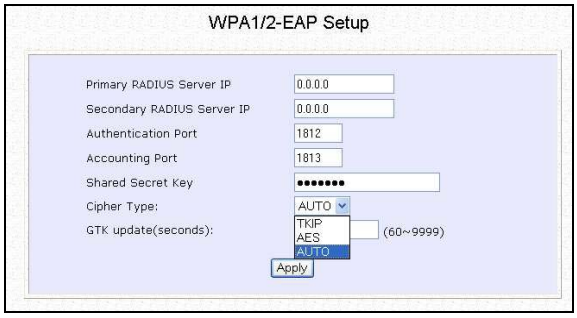
Click the **Apply** button and reboot your system, after which your settings will become effective.

Setup WPA Enterprise

(Available in Access Point mode)

Follow these steps if you have selected the **WPA**, **WPA1-Enterprise**, **WPA2-Enterprise**, or **WPA-Enterprise-AUTO** security modes.

At the **WPA1/2-EAP Setup** page,



Step 1:

Key in the IP address of the **Primary RADIUS Server** in your WLAN.

You can optionally add in the IP address of a **Secondary RADIUS Server**, if any. The RADIUS authentication server MUST be in the same subnet as the access point.

Step 2:

By default, the value for **Authentication Port** number is **1812**. You can either leave this value as it is or key in a different Authentication Port but it MUST match the corresponding port of the RADIUS server.

Step 3:

By default, the value for **Accounting Port** is **1813**. You can leave this value as it is. This value must be set to be the same as the one in the RADIUS server.

Step 4:

Enter the **Shared Secret Key** used to validate client-server RADIUS communications.

Step 5:

Select the **length** of each encryption key:

- **64- bit**

10 hexadecimal or 5 ASCII Text

- **128-bit**

26 hexadecimal or 13 ASCII Text

Step 6:

For WPA-Enterprise
Set the **Cipher Type** to **TKIP**.
WPA replaces WEP with a strong encryption technology called Temporal Key Integrity Protocol (TKIP) with Message Integrity Check (MIC).

For WPA2- Enterprise
Set the **Cipher Type** to **AES**.
Advanced **E**ncryption **S**tandard (AES) is a symmetric 128-bit block data encryption technique. It is a requirement of WPA2 under the IEEE 802.11i standard.

For WPA- Enterprise -AUTO
Set the **Cipher Type** to **Auto** to allow the access point to automatically detect the cipher type to use.

Step 7:

Enter the **GTK (Group Transient Key) Updates**.
This is the length of time after which the access point will automatically generate a new shared key to secure multicast/broadcast traffic among all stations that are communicating with it. By default, the value is 600 seconds.

Step 8:

Click the **Apply** button and reboot your system, after which your settings will become effective.

Configure the Security Features

Use Packet Filtering

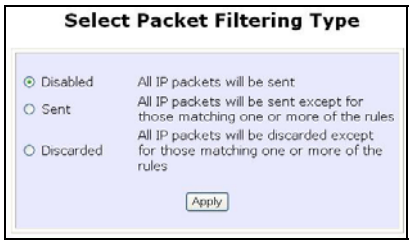
Packet filtering selectively allows /disallows applications from Internet connection.

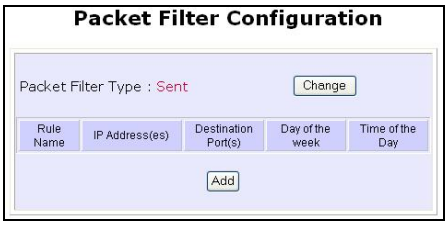
Configure Packet Filtering

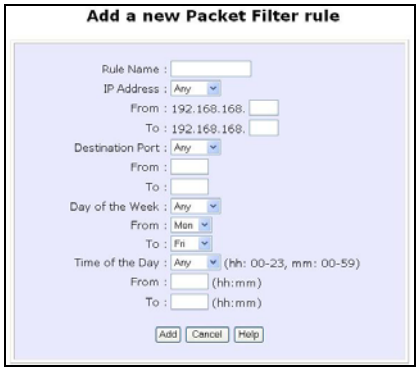
Step 1:
Select **Packet Filtering** from the **Security Configuration** command menu.

Step 2:
Select the **Packet Filter Type** by clicking on the **Change** button.

Step 3:
Select from three choices: **Disabled**, **Sent**, **Discarded**, and then click on the **Apply** button. The default is **Disabled**, which allows all packets to be sent.


Select Packet Filtering Type
Disabled
All IP packets will be sent
Sent
All IP packets will be sent except for those matching one or more of the rules
Discarded
All IP packets will be discarded except for those matching one or more of the rules
Apply



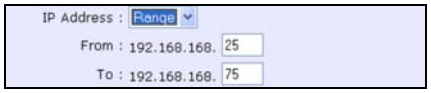


Step 4:
Click on the **Add** button and you will be able to define the details of your **Packet Filter Rule** from the screen on the right.

4a). Enter **Rule Name** for this new packet filtering rule. For example, *BlockCS*

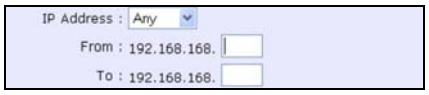
4b). From the **IP Address** drop down list, select whether to apply the rule to:

- A **Range** of IP addresses
  In this case, you will have to define **(From)** which IP address **(To)** which IP address, your range extends.



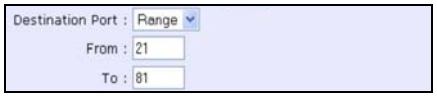
- A **Single** IP address
  Here, you need only specify the source IP address in the **(From)** field.

- **Any** IP address
  You may here, leave both, the **(From)** as well as the **(To)** fields, blank. Here, the rule will apply to all IP addresses.

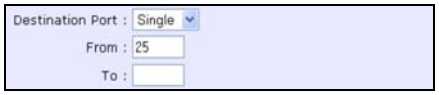


4c). At the **Destination Port** drop down list, select either:

- A **Range** of TCP ports
  In this case, you will have to define **(From)** which port **(To)** which port, your rule applies.



- A **Single** TCP port
  Here, you need only specify the source port in the **(From)** field.



- **Any** IP port
  You may here, leave both, the **(From)** as well as the **(To)** fields, blank. Here, the rule will apply to all ports.

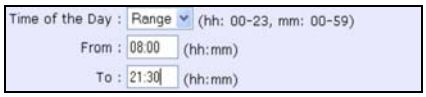
4d). From the **Day of the Week** drop down list, select whether the rule should apply to:

- A **Range** of days
  Here, you will have to select **(From)** which day **(To)** which day

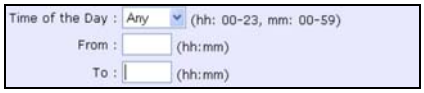
- **Any** day
  In this case, you may skip both the **(From)** as well as the **(To)** drop down fields.

4e). At the **Time of the Day** drop down list, you may also choose to apply the rule to:

- A **Range** of time
  In which case, you have to specify the time in the format **HH:MM**, where **HH** may take any value from 00 to 23 and **MM**, any value from 00 to 59.



- **Any** time
  Here, you may leave both **(From)** and **(To)** fields blank.



Step 5:
Click on the **Apply** button to make the new rule effective.

The **Filtering Configuration** table will then be updated.

Add a new Packet Filter rule
Rule Name : BlockCS
IP Address : Any
From : 192.168.168.
To : 192.168.168.
Destination Port : Single
From : 27015
To : 27015
Day of the Week : Range
From : Mon
To : Fri
Time of the Day : Range (hh: 00-23, mm: 00-59)
From : 07:00 (hh:mm)
To : 18:00 (hh:mm)
Add Cancel Help

Step 6:
In this example, we would block an application called CS from all PCs (any IP address within the network) from Monday to Friday 7am to 6pm, and this application is using the port number 27015.

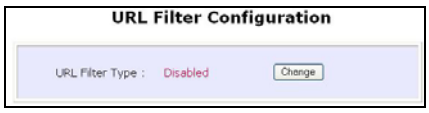
Therefore, for a rule we name BlockCS, and add the entries depicted on the left. Clicking on the **Add** button will effect your packet filter rule.

Use URL Filtering

URL Filtering allows you to block objectionable websites from your LAN users.

Configure URL Filtering

Step 1:
Select **URL Filtering** from the **Security Configuration** command menu.

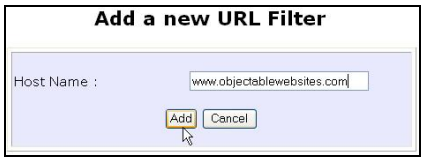


Step 2:
To select the **URL Filter Type**, click the **Change** button.

Step 3:
Select to **Block** or **Allow**, and then click on the **Apply** button. The default is **Disabled**, which allows all websites to be accessed.

Then click the **Add** button.

Select URL Filtering Type
Disabled
No Internet access restriction
Block
Block user - specified websites only; allow all other websites
Allow
Allow user - specified websites only; block all other websites
Apply



Step 4:
For the **Host Name** field, input the web site address that you wish to block. Then click the **Add** button to complete your setup.

Configure the Firewall

Configure SPI Firewall

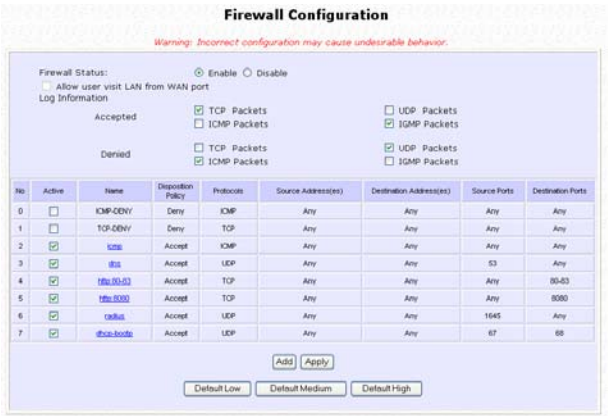
Stateful Packet Inspection (SPI) thwarts common hacker attacks like IP Spoofing, Port Scanning, Ping of Death, and SynFlood by comparing certain key parts of the packet to a database of trusted information before allowing it through.

NOTE
Firewall security rules should be planned carefully as incorrect configuration may cause improper network function.

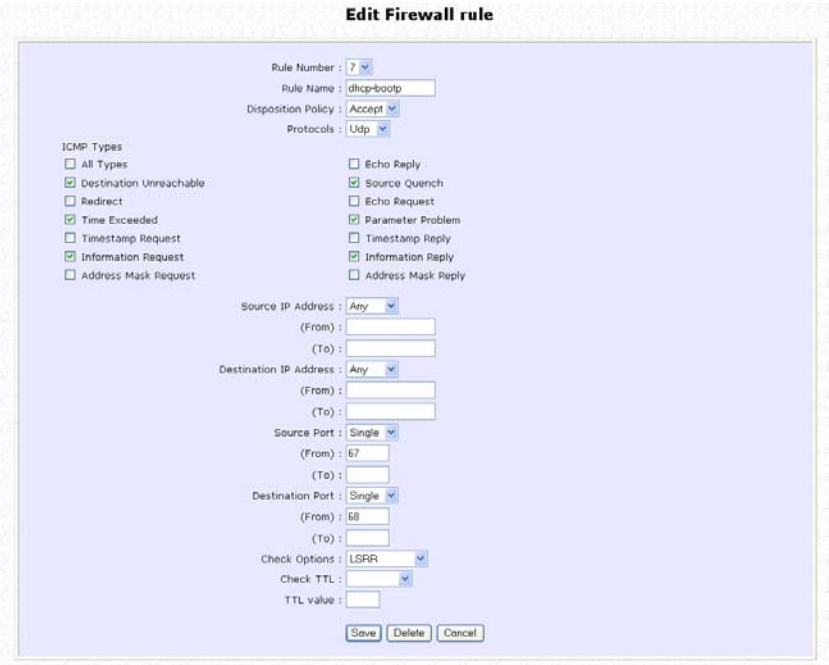
Select **Firewall Configuration** from the **Security Configuration** command menu.

Enable the firewall. You can choose among the **Default Low**, **Default Medium** or **Default High** security options for convenient setup.

Then you may choose the type of network activity information you wish to log for reference. Data activity arising from different types of protocol can be recorded.



You may add more firewall rules for specific security purposes. Click on the **Add** radio button at the screen shown above, followed by the **Edit** button.



Rule Name : Enter a unique name to identify this firewall rule.

Disposition Policy : This parameter determines whether the packets obeying the rule should be accepted or denied by the firewall. Choose between Accept and Deny.

Protocols : Users are allowed to select the type of data packet from: TCP, UDP, ICMP, IGMP or ALL.

Note: If users select either ICMP or IGMP, they are required to make further selection in the ICMP Types or IGMP Types respectively.

ICMP Types : This IP protocol is used to report errors in IP packet routing. ICMP serves as a form of flow control, although ICMP messages are neither guaranteed to be received or transmitted.

ICMP Packet Type	Description
Echo request	Determines whether an IP node (a host or a router) is available on the network.
Echo reply	Replies to an ICMP echo request.

Destination unreachable	Informs the host that a datagram cannot be delivered.
Source quench	Informs the host to lower the rate at which it sends datagrams because of congestion.
Redirect	Informs the host of a preferred route.
Time exceeded	Indicates that the Time-to-Live (TTL) of an IP datagram has expired.
Parameter Problem	Informs that host that there is a problem in one the ICMP parameter.
Timestamp Request	Information that is from the ICMP data packet.
Information Request	Information that is from the ICMP data packet.
Information Reply	Information that is from the ICMP data packet.

IGMP Types : This IP protocol is used to establish host memberships in particular multicast groups on a single network. The mechanisms of the protocol allow a host to inform its local router, using Host Membership Reports.

Host Membership Report	Information that is from the IGMP data packet.
Host Membership Query	Information that is from the IGMP data packet.
Leave Host Message	Information that is from the ICMP data packet.

Source IP : This parameter allows you to specify workstation(s) generating the data packets. Users can either set a single IP address or set a range of IP addresses.

Destination IP : This parameter lets you specify the set of workstations that receive the data packets. Users can either set a single IP address or set a range of IP addresses.

Source Port : You can control requests for using a specific application by entering its port number here. Users can either set a single port number or a range of port numbers.

Destination Port : This parameter determines the application from the specified destination port. Users can either set a single port number or a range of port numbers.

Check Options : This parameter refers to the options in the packet header. The available selection options are abbreviated as follows:

SEC – Security
LSRR – Loose Source Routing
Timestamp – Timestamp
RR – Record Route
SID – Stream Identifier
SSRR – Strict Source Routing
RA – Router Alert

Check TTL : This parameter would let you screen packets according to their Time-To-Live (TTL) value available options are:

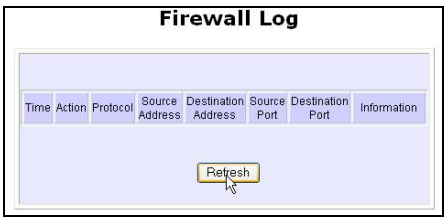
1. Equal
2. Less than
3. Greater than
4. Not equal

Use the Firewall Log

The Firewall Log captures and stores network traffic information such as the type of data traffic, the time, the source and destination address / port, as well as the action taken by the firewall.

View Firewall Logs

Step 1:
Select **Firewall Log** from the **SECURITY CONFIGURATION** command menu.



Step 2:
Click on the **Refresh** button to see the information captured in the log:

- **Time** at which the packet was detected by the firewall.
- **Action**, which states whether the packet was accepted or denied.
- **Protocol** type of the packet.
- **Source Address** from which the packet originated
- **Destination Address** to which the packet was intended.
- **Source Port** from which the packet was initiated.
- **Destination Port** to which the packet was meant for.
- Any **Information**.

Administer the System

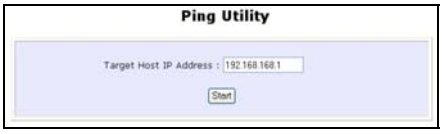
Use the System Tools

Use the Ping Utility

(Available in Wireless Routing Client and Gateway modes.)

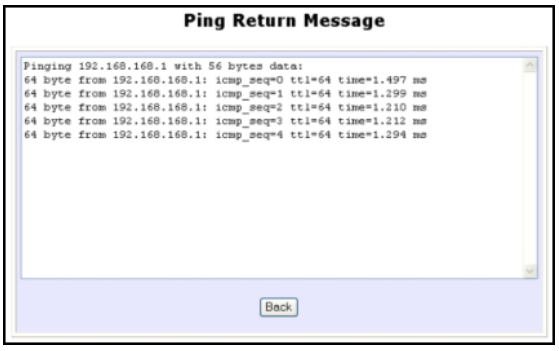
You can check whether the access point can communicate (ping) with another network host with the Ping Utility.

Step 1:
Select Ping Utility under the SYSTEM TOOLS command menu.



Step 2:
Enter the IP address of the target host to ping.

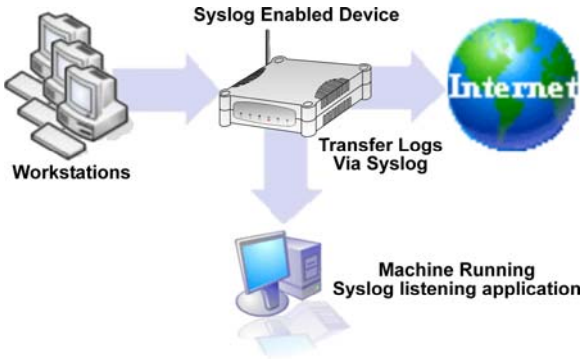
Click the Start button.


Ping Return Message
Pinging 192.168.168.1 with 56 bytes data:
64 byte from 192.168.168.1: icmp_seq=0 ttl=64 time=1.497 ms
64 byte from 192.168.168.1: icmp_seq=1 ttl=64 time=1.299 ms
64 byte from 192.168.168.1: icmp_seq=2 ttl=64 time=1.210 ms
64 byte from 192.168.168.1: icmp_seq=3 ttl=64 time=1.212 ms
64 byte from 192.168.168.1: icmp_seq=4 ttl=64 time=1.294 ms
Back

The Ping messages are displayed.

Use Syslog

Syslog forwards system log messages in a network to a machine running a Syslog listening application. It is used to help in managing the computer system and increase security on the network.
Freeware supporting Syslog is widely available for download from the Internet.



This section shows how to:

- Setup Syslog.
- View logged information.

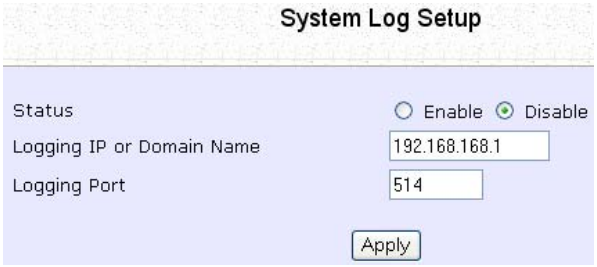
The System Log Setup page allows the user to:

- **Enable** or **Disable** system logging.
- Set the **Remote IP Address or Domain Name** and **Remote Port** for the router to send the system log messages to.

Follow these steps to setup Syslog:

Step 1:
Click on **Syslog** from the **SYSTEM TOOLS** menu.

Step 2:



Select to **Enable** Syslog.

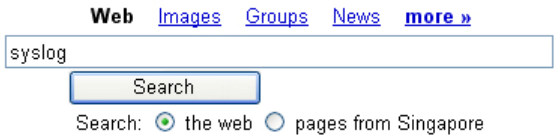
Enter the **Logging IP or Domain Name**

Enter the **Logging Port**

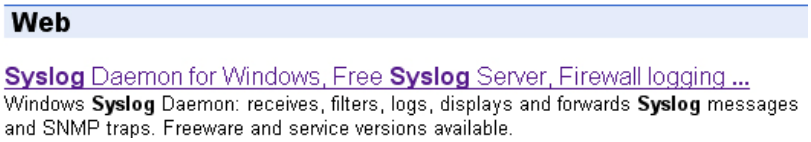
Click **Apply** to make the changes.

Follow these sample steps to view logged information:

Step 1:
Search for a Syslog listening application.



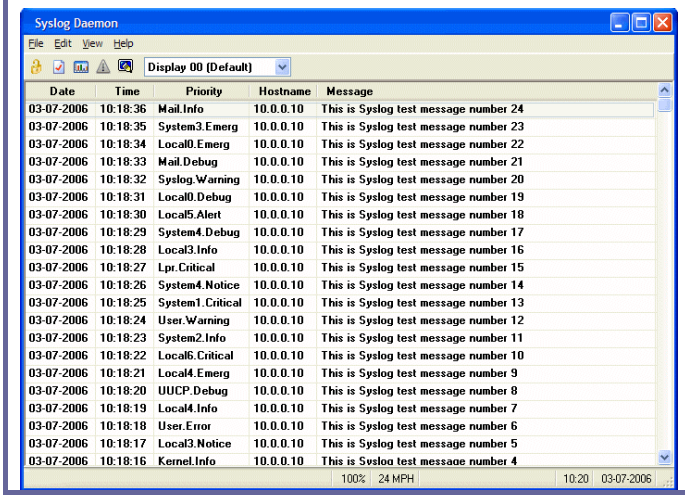
Step 2:
Select a Syslog listening application.


Web
Syslog Daemon for Windows, Free Syslog Server, Firewall logging ...
Windows Syslog Daemon: receives, filters, logs, displays and forwards Syslog messages and SNMP traps. Freeware and service versions available.

Step 3:
Download Syslog listening application.

Step 4:
Install Syslog listening application.

Step 5:
View logged information on Syslog listening application.

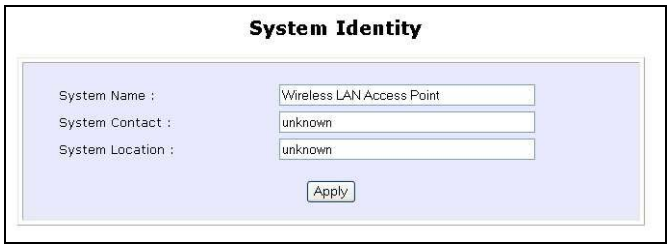

Syslog Daemon
File Edit View Help
Display 00 (Default)
Date Time Priority Hostname Message
03-07-2006 10:18:36 Mail.Info 10.0.0.10 This is Syslog test message number 24
03-07-2006 10:18:35 System3.Emerg 10.0.0.10 This is Syslog test message number 23
03-07-2006 10:18:34 Local0.Emerg 10.0.0.10 This is Syslog test message number 22
03-07-2006 10:18:33 Mail.Debug 10.0.0.10 This is Syslog test message number 21
03-07-2006 10:18:32 Syslog.Warning 10.0.0.10 This is Syslog test message number 20
03-07-2006 10:18:31 Local0.Debug 10.0.0.10 This is Syslog test message number 19
03-07-2006 10:18:30 Local5.Alert 10.0.0.10 This is Syslog test message number 18
03-07-2006 10:18:29 System4.Debug 10.0.0.10 This is Syslog test message number 17
03-07-2006 10:18:28 Local3.Info 10.0.0.10 This is Syslog test message number 16
03-07-2006 10:18:27 Lpr.Critical 10.0.0.10 This is Syslog test message number 15
03-07-2006 10:18:26 System4.Notice 10.0.0.10 This is Syslog test message number 14
03-07-2006 10:18:25 System1.Critical 10.0.0.10 This is Syslog test message number 13
03-07-2006 10:18:24 User.Warning 10.0.0.10 This is Syslog test message number 12
03-07-2006 10:18:23 System2.Info 10.0.0.10 This is Syslog test message number 11
03-07-2006 10:18:22 Local6.Critical 10.0.0.10 This is Syslog test message number 10
03-07-2006 10:18:21 Local4.Emerg 10.0.0.10 This is Syslog test message number 9
03-07-2006 10:18:20 UUCP.Debug 10.0.0.10 This is Syslog test message number 8
03-07-2006 10:18:19 Local4.Info 10.0.0.10 This is Syslog test message number 7
03-07-2006 10:18:18 User.Error 10.0.0.10 This is Syslog test message number 6
03-07-2006 10:18:17 Local3.Notice 10.0.0.10 This is Syslog test message number 5
03-07-2006 10:18:16 Kernel.Info 10.0.0.10 This is Syslog test message number 4
100% 24 MPH 10:20 03-07-2006

Set System Identity

You can set the **System Identity** of the access point to be uniquely identifiable.

Step 1:

Select **System Identity** from the **SYSTEM TOOLS** menu.



Step 2:

Enter a unique **System Name**.

Step 3:

Enter the name of a contact person in the **System Contact** field.

Step 4:

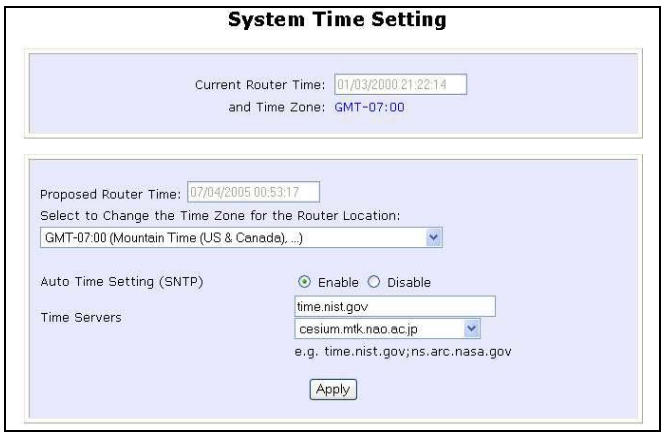
Enter the **System Location**.
This entry identifies the device location, especially when there are multiple devices.

Step 5:

Click on the **Apply** button to effect the changes.

Setup System Clock

Step 1:
Select **System Clock Setup** from the **SYSTEM TOOLS** menu.



Step 2:
Select the appropriate time zone from the **Select to Change the Time Zone for the Router Location** drop-down list.

Step 3:
Enable the Auto Time Setting (SNTP) radio button. **SNTP** stands for Simple Network Time Protocol and is used to synchronise computer clocks.

Step 4:
Fill in the **Time Servers** field and click on the **Apply** button to effect the changes.

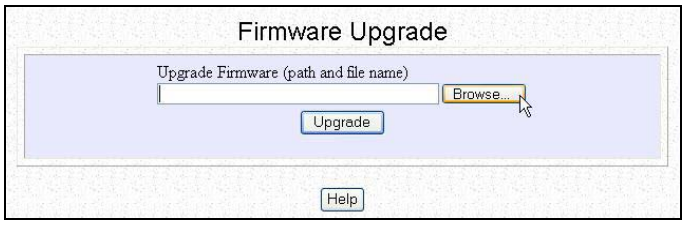
Upgrade the Firmware with uConfig

You can check the types and version of your firmware by clicking on **About System** from the **HELP** menu.

To begin with, ensure that you have the updated firmware available.

Step 1:

Select **Firmware Upgrade** from the **SYSTEM TOOLS** menu.



Step 2:

Click on the **Browse** button to locate the file.

Step 3:

Click on the **Upgrade** button.

Follow the instructions given during the upgrading process.

Firmware Upgrade
CAUTION !!!!!!
Upgrading firmware now .....
please wait 50 seconds and don't turn off the power
until see the "Firmware Upgrade Successfully" page,
reboot to effect all changes.
BURNING FLASH !!!
Please keep current upgrade page !!!

Step 4:

You need to reboot the system after the firmware upgrade.

NOTE

The firmware upgrade process must NOT be interrupted; otherwise the device might become unusable.

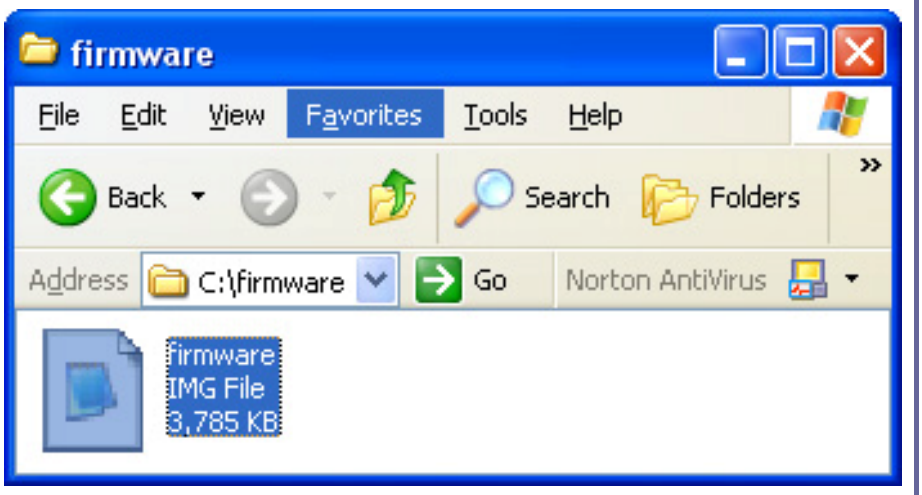
Upgrade the Firmware with Command Line Interface

You can check the types and version of your firmware by clicking on **About System** from the **HELP** menu in UConfig.

Follow these steps to upgrade firmware from Command Line Interface (CLI).

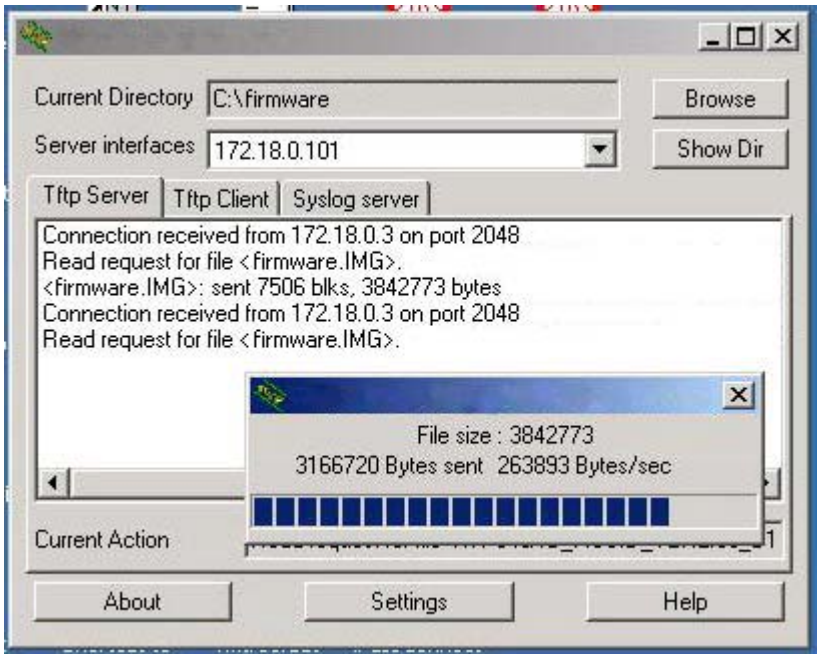
Step 1:

Ensure that you have the updated firmware available.



Step 2:

On the PC connected to the AP, run a TFTP server and setup to point to the same firmware image filename.

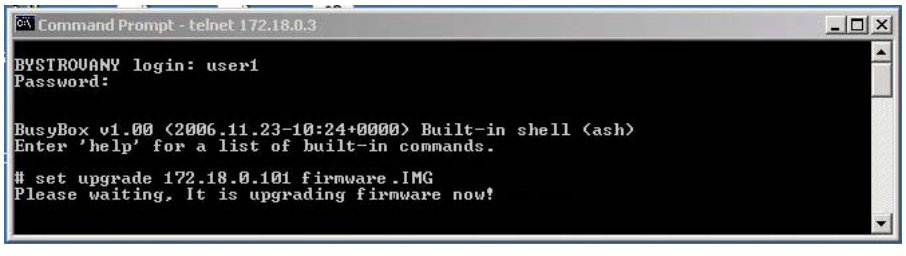


Sample Screenshot

Step 3:

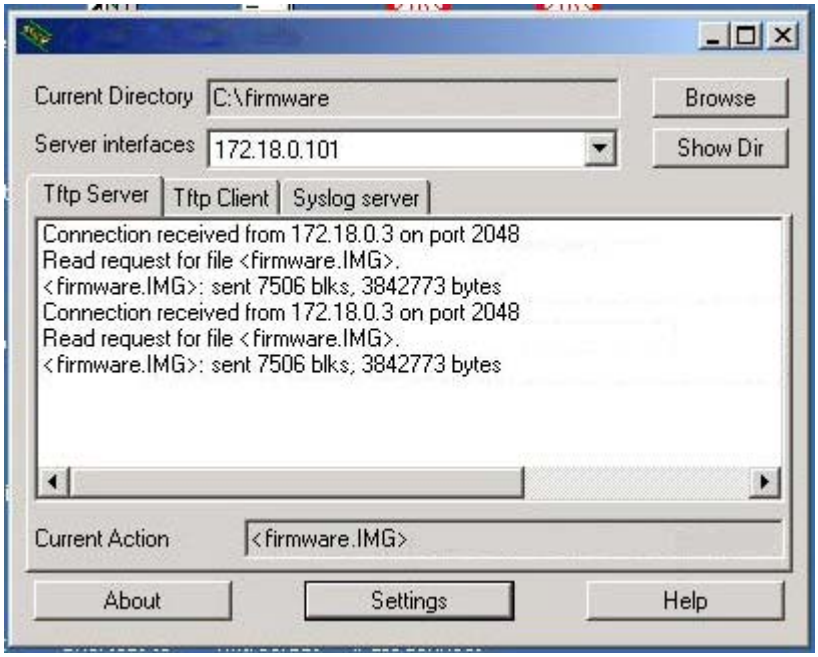
In the Command Line Interface, enter the command with the IP address of the AP and the filename of the firmware image as the parameters:

Set upgrade <IP address of AP> <firmware image filename>

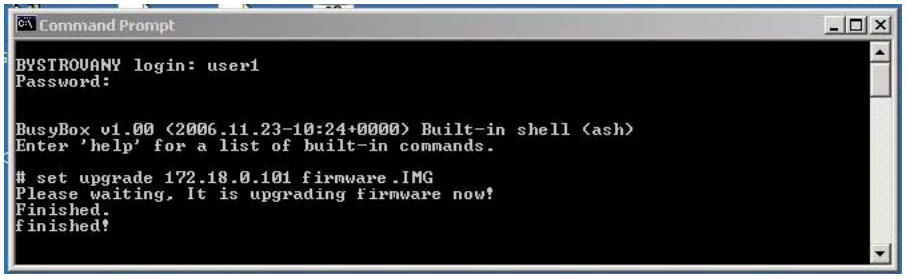

Command Prompt - telnet 172.18.0.3
BYSTROVANY login: user1
Password:
BusyBox v1.00 (2006.11.23-10:24+0000) Built-in shell (ash)
Enter 'help' for a list of built-in commands.
set upgrade 172.18.0.101 firmware.IMG
Please waiting, It is upgrading firmware now!

Step 4:

These screens display when upgrade is done.



Sample Screenshot



NOTE

The firmware upgrade process must NOT be interrupted; otherwise the device might become unusable.

Perform Firmware Recovery

If the system fails to launch properly, the access point will automatically switch to loader mode and the diagnostic LED will remain lighted. The firmware should then be reloaded.

Access Point State	Diagnostic LED (Y) State
Corrupted firmware – access point automatically switches to loader mode	Blinks very fast
Recovery in progress	ON
Successful recovery	Blinks very slowly

Before starting, check the status of the diagnostic LED to confirm if firmware failure has occurred.

Step 1:

Stop power supply and disconnect the access point from the network.

Step 2:

Connect the LAN port of the access point to the LAN port of your computer with an MDI cable.

Step 3:

Power on the access point, and start up your computer. You are recommended to set your computer's IP address to 192.168.168.100 and its network mask to 255.255.255.0.

It is recommended that your computer IP address is set to 192.168.168.100 and the network mask is set to 255.255.255.0

Step 4:

Insert the Product CD into the CD drive of your computer.

Step 5:

From the **Start** menu, click **Run** and type **cmd**. When the command prompt window appears, type in the following command:

X:\recovery\TFTP -i 192.168.168.1 PUT image_name.IMG, where **X** refers to your CD drive and **image_name.IMG** refers to the firmware filename found in the Recovery folder of the Product CD.

Step 6:

If you have downloaded a newer firmware and have saved it in your local hard disk as:
C:\accesspoint\accesspointxxx.IMG, then replace the command with this new path and firmware name. For example:
C:\accesspoint\TFTP –i 192.168.168.1 PUT accesspointxxx.img

The recovery process takes place.
You can monitor the progress of the recovery process with the diagnostic LED.

When firmware restoration is complete, reboot the access point and it will be ready to operate.

Backup or Reset the Settings

You may choose to save the current configuration profile, create a backup of it on your hard disk, restore an earlier saved profile, or to reset the access point back to its default settings.

Reset your settings

Step 1:

Select **Backup or Reset Settings** from the **SYSTEM TOOLS** menu.

Step 2:

To discard configurations made and restore the access point to its initial factory settings, click on the **Reset** button.

Step 3:

The system will prompt you to reboot your device, click on the **Reboot** button.

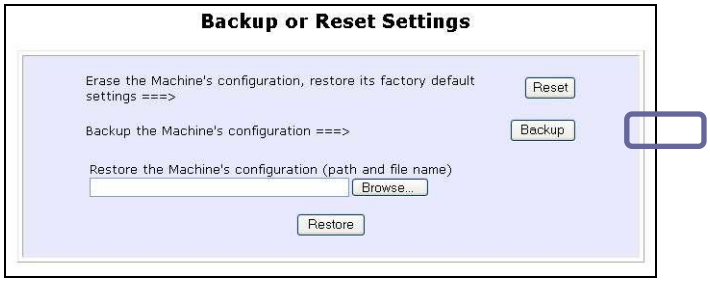
Backup your Settings

Step 1:

Select **Backup or Reset Settings** from the **SYSTEM TOOLS** menu.

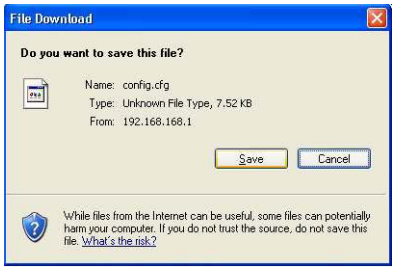
Step 2:

To back up the current settings of your access point onto your hard disk drive, click on the **Backup** button.



Step 3:

Save your configuration file to your local disk.


File Download
Do you want to save this file?
Name: config.cfg
Type: Unknown File Type, 7.52 KB
From: 192.168.168.1
Save
Cancel
While files from the Internet can be useful, some files can potentially harm your computer. If you do not trust the source, do not save this file. What's the risk?

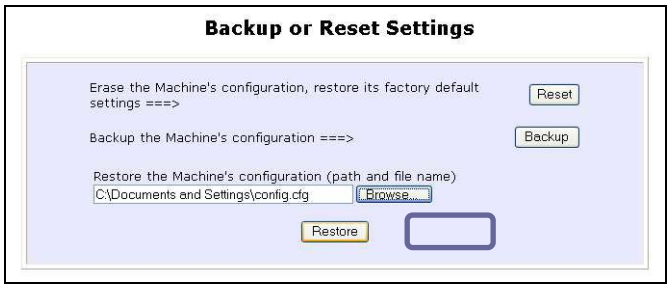
Restore your Settings

Step 1:

Select **Backup or Reset Settings** from the **SYSTEM TOOLS** menu.

Step 2:

To restore previously saved settings, click on the **Browse...** button and select the folder where you saved your configuration file.



Click on the **Restore** button and the system will prompt you to reboot your device.

Reboot the System

Most of the changes you make to the system settings require a system reboot before the new parameters can take effect.

Step 1:

Select **Reboot System** from the **SYSTEM TOOLS** menu.

Step 2:

Click on the **Reboot** button.

Step 3:

Wait for the system to reboot and the login page will be displayed.

Change the Password

It is recommended that the login password is changed from the factory default password.

Step 1:

Select **Change Password** from the **SYSTEM TOOLS** menu.

Step 2:

Key in the **Current Password**. The password is case-sensitive and defaulted to ***password***

Enter the **New Password** field and then **Confirm Password**.

Step 3:

Click on the **Apply** button to update the changes.

To Logout

Step 1:

Select **Logout** from the **SYSTEM TOOLS** menu.

Step 2:

Click the **LOGIN!** button to access the access point configuration interface again.

Wireless LAN Access Point Management
Please enter your password:
LOGIN!
[Forgot your password? - see the User's Guide for instructions]

Use the HELP menu

View About System

System Information displays system configuration information that may be required by support technicians for troubleshooting.

Select **About System** from the **HELP** menu.

The **System Information** page displays information about the access point configuration settings.

System Information

Device:	
System Up Time :	0 Days 06:45:50
BIOS/Loader Version :	2.31 (build 0310)
Firmware Version :	2.06 (build 1229)
Network Address Translation :	Enabled
Wireless:	
Hardware Address :	00-80-48-37-95-8b
WLAN name (ESSID):	Access Point
Operating frequency :	0MHz
Operating Channel :	0
Security mode :	None
RSSI:	0
LAN Port:	
Hardware Address :	00-80-48-37-95-8a
IP Address :	192.168.168.1
Network Mask :	255.255.255.0
DHCP Server :	Enabled
WAN Port:	
Hardware Address :	00-80-48-37-95-8b
WAN Type :	Dynamic (DHCP)
IP Address :	
Network Mask :	
Default Gateway :	

Appendix: Use the Command Line Interface

Get Operation List

SYNTAX	DESCRIPTION
Get tasks	Display all active process/tasks.
Get sysinfo	Display system information.
Get aplist	Display list of access points discovered.
Get athstats	Display wireless driver information.
Get brinfo	Display bridge and interfaces information.
Get brmacshow	Display bridge learned MAC address list.
Get bssinfo.	Display current radio information.
Get channel	Display current wireless channel number.
Get chanlist	Display current domain wireless channels.
Get ieee80211stats	Display ieee80211 protocol statistics.
Get routeshow	Display the routing table information.
Get stalist	Display a list of currently associated stations.
Get linkinfo	Display client link information (Client mode only)
Get macstats	Display a list of currently learnt wireless device MAC addresses.
Get opmode	Display current wireless operation mode.
Get wmode	Display wireless mode

Set Operation List

SYNTAX	DESCRIPTION
Set factorydefault	Set factorydefault – restore configuration to factory default.
Restart	Do a warm reboot.

Save Configuration

SYNTAX	DESCRIPTION
Commit	Save current configuration to flash. Most commands require rebooting to take effect after saving.

Long Range

Check for recommended values from long distance option setup page.

SYNTAX	DESCRIPTION
Set outdoor <enable/disable>	Enable outdoor for long-range connection.
Set distance <value>	Set the connection distant (value in decimal)
Set acktimeout <value>	Set the ACK timeout (value in decimal)
Set ctstimeout <value>	Set the CTS timeout (value in decimal)
Set slottimeout <value>	Set the Slot timeout (value in decimal)

TX Power

SYNTAX	DESCRIPTION
Set txpower <string>	(Default full) auto, 1, 2, 3, 4, ..., 17, full, min

TX Rate

SYNTAX	DESCRIPTION
Set txrate <string>	Values are: (default auto) (802.11a)-- 6, 9, 12, 18, 24, 36, 48, 54, auto (Version AG) (802.11b/g mixed)-- 1, 2, 5,5, 11, 6, 9, 12, 18, 24, 36, 48, 54, auto (802.11b-only)-- 1, 2, 5.5, 11, auto

Wireless Mode

SYNTAX	DESCRIPTION
Set wirelessmode <string>	Supported strings are: auto, 11a, 11b, 11g, pureg, superg, supera
Set autochannelselect Enable/disable	Enable or disable smart channel select during power up.
Set radio_off_eth_down enable/disable	Enable or disable auto turn off radio when Ethernet port connection link is lost.

WEP Key

Must first set a key entry type, and then proceed to set the key index, size, and value.

SYNTAX	DESCRIPTION
Set key <keyindex> <keysize> <keyvalue>	Set keyentrymethod hex/ascii
Set key <keyindex> default	Set default key.

Add or Delete User

SYNTAX	DESCRIPTION
Set user < [-r | -w] > <password> username	To add a user.
Set user –d username	To delete user.

Country Code

SYNTAX	DESCRIPTION
Set countrycode <iso.name> Set countrycode <2 letter string>	List of countries: {0, "NA" }, {CTRY_ALBANIA, "AL" }, {CTRY_ALGERIA, "DZ" }, {CTRY_ARGENTINA, "AR" }, {CTRY_ARMENIA, "AM" }, {CTRY_AUSTRALIA, "AU" }, {CTRY_AUSTRIA, "AT" }, {CTRY_AZERBAIJAN, "AZ" }, {CTRY_BAHRAIN, "BH" }, {CTRY_BELARUS, "BY" }, {CTRY_BELGIUM, "BE" }, {CTRY_BELIZE, "BZ" }, {CTRY_BOLIVIA, "BO" }, {CTRY_BRAZIL, "BR" }, {CTRY_BRUNEI_DARUSSALAM, "BN" }, {CTRY_BULGARIA, "BG" }, {CTRY_CANADA, "CA" }, {CTRY_CHILE, "CL" }, {CTRY_CHINA, "CN" }, {CTRY_COLOMBIA, "CO" }, {CTRY_COSTA_RICA, "CR" }, {CTRY_CROATIA, "HR" }, {CTRY_CYPRUS, "CY" }, {CTRY_CZECH, "CZ" }, {CTRY_DENMARK, "DK" }, {CTRY_DOMINICAN_REPUBLIC, "DO" }, {CTRY_ECUADOR, "EC" }, {CTRY_EGYPT, "EG" }, {CTRY_EL_SALVADOR, "SV" }, {CTRY_ESTONIA, "EE" }, {CTRY_FINLAND, "FI" }, {CTRY_FRANCE, "FR" }, {CTRY_FRANCE2, "F2" }, {CTRY_GEORGIA, "GE" }, {CTRY_GERMANY, "DE" }, {CTRY_GREECE, "GR" }, {CTRY_GUATEMALA, "GT" }, {CTRY_HONDURAS, "HN" }, {CTRY_HONG_KONG, "HK" }, {CTRY_HUNGARY, "HU" }, {CTRY_ICELAND, "IS" }, {CTRY_INDIA, "IN" }, {CTRY_INDONESIA, "ID" }, {CTRY_IRAN, "IR" }, {CTRY_IRELAND, "IE" }, {CTRY_ISRAEL, "IL" },

	{CTRY_ITALY, "IT" }, {CTRY_JAPAN, "JP" }, {CTRY_JAPAN1, "J1" }, {CTRY_JAPAN2, "J2" }, {CTRY_JAPAN3, "J3" }, {CTRY_JAPAN4, "J4" }, {CTRY_JAPAN5, "J5" }, {CTRY_JAPAN6, "J6" }, {CTRY_JORDAN, "JO" }, {CTRY_KAZAKHSTAN, "KZ" }, {CTRY_KOREA_NORTH, "KP" }, {CTRY_KOREA_ROC, "KR" }, {CTRY_KOREA_ROC2, "K2" }, {CTRY_KOREA_ROC3, "K3" }, {CTRY_KUWAIT, "KW" }, {CTRY_LATVIA, "LV" }, {CTRY_LEBANON, "LB" }, {CTRY_LIECHTENSTEIN, "LI" }, {CTRY_LITHUANIA, "LT" }, {CTRY_LUXEMBOURG, "LU" }, {CTRY_MACAU, "MO" }, {CTRY_MACEDONIA, "MK" }, {CTRY_MALAYSIA, "MY" }, {CTRY_MALTA, "MT" }, {CTRY_MEXICO, "MX" }, {CTRY_MONACO, "MC" }, {CTRY_MOROCCO, "MA" }, {CTRY_NETHERLANDS, "NL" }, {CTRY_NEW_ZEALAND, "NZ" }, {CTRY_NORWAY, "NO" }, {CTRY_OMAN, "OM" }, {CTRY_PAKISTAN, "PK" }, {CTRY_PANAMA, "PA" }, {CTRY_PERU, "PE" }, {CTRY_PHILIPPINES, "PH" }, {CTRY_POLAND, "PL" }, {CTRY_PORTUGAL, "PT" }, {CTRY_PUERTO_RICO, "PR" }, {CTRY_QATAR, "QA" }, {CTRY_ROMANIA, "RO" }, {CTRY_RUSSIA, "RU" }, {CTRY_SAUDI_ARABIA, "SA" }, {CTRY_SINGAPORE, "SG" }, {CTRY_SLOVAKIA, "SK" }, {CTRY_SLOVENIA, "SI" }, {CTRY_SOUTH_AFRICA, "ZA" }, {CTRY_SPAIN, "ES" }, {CTRY_SWEDEN, "SE" }, {CTRY_SWITZERLAND, "CH" }, {CTRY_SYRIA, "SY" }, {CTRY_TAIWAN, "TW" }, {CTRY_THAILAND, "TH" }, {CTRY_TRINIDAD_Y_TOBAGO, "TT" }, {CTRY_TUNISIA, "TN" }, {CTRY_TURKEY, "TR" }, {CTRY_UKRAINE, "UA" }, {CTRY_UAE, "AE" }, {CTRY_UNITED_KINGDOM, "GB" }, {CTRY_UNITED_STATES, "US" }, {CTRY_URUGUAY, "UY" }, {CTRY_UZBEKISTAN, "UZ" }, {CTRY_VENEZUELA, "VE" }, {CTRY_VIET_NAM, "VN" }, {CTRY_YEMEN, "YE" }, {CTRY_ZIMBABWE, "ZW" },

Channel

SYNTAX	DESCRIPTION
Set channel <value>	(Value in decimal)

SSID

SYNTAX	DESCRIPTION
Set ssid <string>	(Not More than 32 characters)

Closed System

SYNTAX	DESCRIPTION
Set hidessid enable/disable	Enable or disable broadcasting of SSID.

Per Node

SYNTAX	DESCRIPTION
Set apbridge enable/disable	Enable or disable isolation of wireless client.

RTS, Fragment, and Beacon Interval

SYNTAX	DESCRIPTION
Set rts <value	(Value in decimal, default 2312, range 1 to 2312)
Set fragment <value>	(Value in decimal, default 2346, range, 256 to 2346)
Set beaconintval <value>	(Value in decimal, default 1, range 1 to 1000)
Set dtim <value>	Data Beacon Rate (value in decimal, default 1, range 1 to 16384)

WLAN State

SYNTAX	DESCRIPTION
Get wlanstate	Display whether status of current wireless operation is Enabled or Disabled.
Set wlanstate enable/disable	Set to Disable to turn off wireless operation. Set to Enable to turn back on wireless operation. Note: When executing this command, please ensure that you are not connected on wireless with device or you will be disconnected from the device and network. The wireless operation can only be Enabled from the Ethernet port or UTP cable connection to device.

Reset Button

SYNTAX	DESCRIPTION
Get buttonpassreset	Display the status of Reset Button operation. If status is (Enabled), resetting of password by pressing Reset Button is allowed. If status is (Disabled), resetting of password by pressing Reset Button is not allowed.
Set buttonpassreset enable/disable	Set to Disable to prevent resetting of password by pressing Reset button. Set to Enable to allow resetting of password by pressing Reset button.

Upgrade Firmware

SYNTAX	Set upgrade <IP address of AP> <firmware image filename>
DESCRIPTION	To upgrade firmware in CLI enter this command with the IP address of AP and the firmware image filename.

Custom Configuration Update

SYNTAX	Cfgfile <operation type> <IP of PC running TFTP server> <filename>
DESCRIPTION	The cfgfile command is used for managing simple configuration changes to multiple access points. It is useful for when the user has many access points to configure and the configuration is mostly the same. **For example if user needs to configure ten access points, and just change the IP address configuration:** 1. Configure the first access point with the common configuration for all the access points using web manager 2. Export the access point configuration file with cfgfile in Telnet. 3. Edit the IP addresses in the access point configuration files to customise them for the individual access points. 4. Import the edited access point configuration files to the respective access points with cfgfile in Telnet. **Requirement and Explanation:** The cfgfile command uses the TFTP (Trivial File Transfer Protocol). This command transfers the access point configuration file to and from the access point. It has 4 operation types for these transfers – Backup, Restore, Export, and Import. Before executing the cfgfile command, there are some requirements that have to be met in order for the command to execute successfully. The TFTP server has to be running on the PC with the Telnet connection to the access point. Make a note of the directory where the access point configuration file is located in. This directory can be a folder on the hard drive of the PC with the Telnet connection. It can also be any storage device that is connected o this PC. The TFTP server has to be set up to point to this directory. This table explains the different Operation Types.

Operation Type	
Backup	The Backup operation saves the configuration from the access point to the configuration file defined in <filename> and stored on the PC. This is a binary file (*.bin) which must not be edited as doing so will corrupt it. (Access Point → PC)
Restore	The Restore operation returns the access point back to the previous configuration according to the configuration file defined in <filename> on the PC. This is a binary file (*.bin) which must not be edited as doing so will corrupt it. (PC → Access Point)
Export	The Export operation extracts a portion of the access point configuration to a text file on the PC which can be edited to further customise it for each access point. This text file can then be imported into other access points with the Import cfgfile operation. (Access Point → PC)
Import	The Import Operation uploads the configuration to the access point. This configuration is the access point configuration which has been exported previously with the Export cfgfile operation and then further edited to customise for each access point. (PC → Access Point)

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